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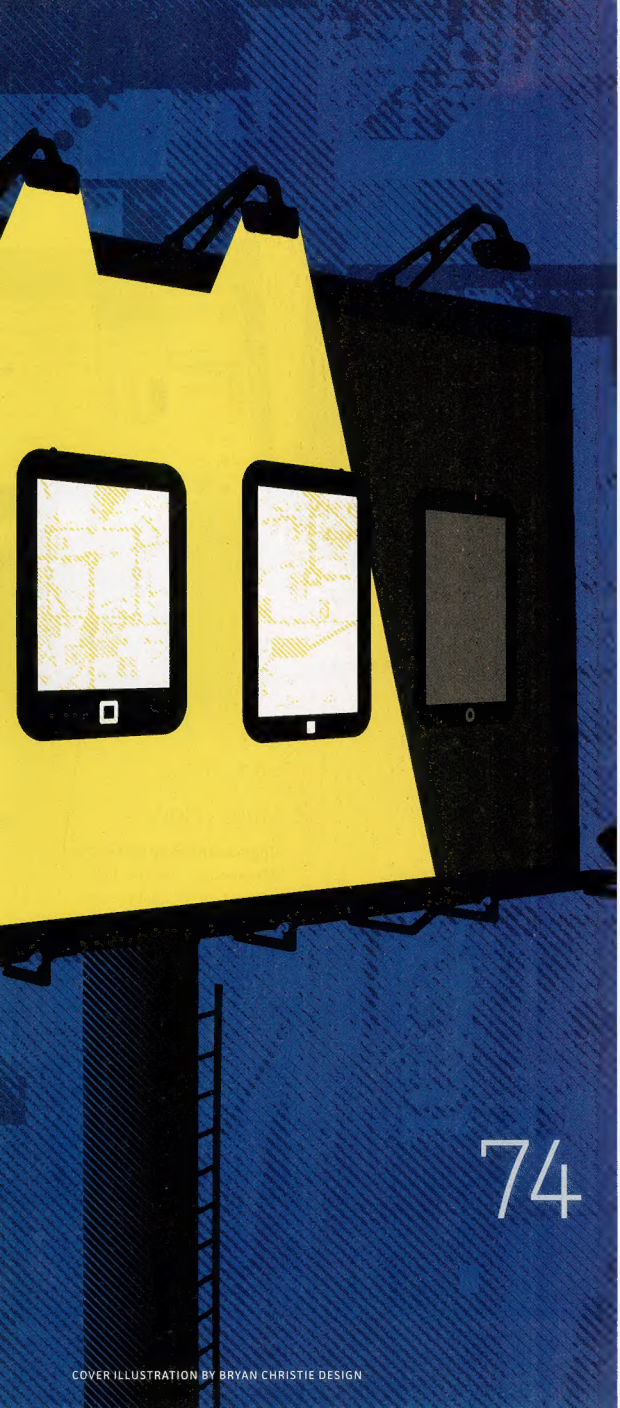

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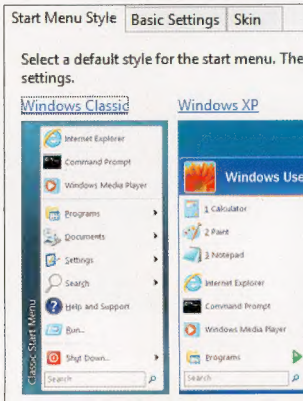

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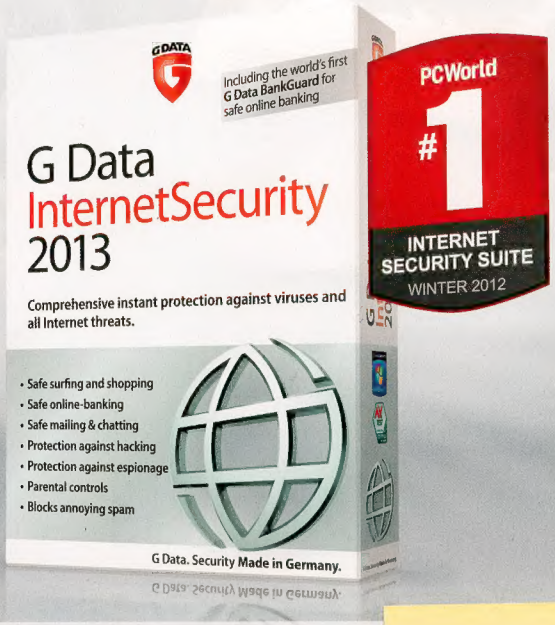

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Editor's Letter

JON PHILLIPS

Why PC Users Hate Microsoft

The software giant needs to create beautiful, branded hardware to inspire user passions and pick up some love.

I CAN'T REMEMBER the last time I saw an email or article comment in which a *PCWorld* reader professed love—or any measure of affection—for Microsoft. In fact, I've been covering PCs as a journalist since 1995, and I can't recall any reader ever sharing even the smallest bit of warmth for the company that has been most instrumental to the health and welfare of the PC platform.

Sure, many Windows users are emotionally attached to their computers. And some even have a good word to say about Windows itself. But I have yet to meet a PC user who cops to even the slightest bit of fondness for Microsoft. This contrasts dramatically with the deification of Apple by so many Mac users.

Have you ever met a Microsoft fanboy? They just do not exist.

So why does Apple receive such love and support from a hard-core fan base, while Microsoft is merely tolerated (at best) and more often scorned? Simple: Microsoft is the electric company, and no one likes the electric company, no matter how important a service it provides.

For the great majority of users, Windows isn't something anyone directly purchases. Our buy-in is all but involuntary, and when we turn on our PCs, it is ready and waiting for us, just like electricity coursing through a wall outlet. But Windows inevitably fails us—and it does so often, because the OS is an insanely complex assembly of code that struggles to remain compatible with whatever software or upgrade hardware that a user may install.

The end result of that failure? We curse the electric company. Windows, like electricity, is just supposed to work. It's supposed to be always-on. Expecting continuous, trouble-free service is almost part of our social contract. And just as we rarely get to choose an electricity provider, the vast majority of PC buyers never have an option to choose an OS provider. So, when Windows fails them, they elevate Microsoft to boogeyman status: a craven, profit-hungry monopoly that runs an unreliable service.

In many ways, Microsoft is a victim of its own success. It so thoroughly dominates the PC desktop that no one is motivated to cut it any slack. The situation would be different if users felt they had invited Windows (and by extension, Microsoft) into their homes.

Of course, Mac OS is also a fallible system that's prone to service interruptions. But because Mac users feel fully complicit in their computer purchases—everyone who buys a Mac, really wants a Mac—they forgive Apple's OS sins.

So how does Microsoft steal a page from Apple's playbook? Well, obviously it can't cede its dominance on the desktop in an appeal for the sympathy vote. Instead, Microsoft needs to pursue Apple's strategy of creating beautiful, branded hardware to inspire user passions, and bestow some cachet and relevance to the Microsoft name. Hardware delivers a level of brand appreciation that OS software just can't match. The new Surface tablets are a great first step (see pages 13 and 48), and if Microsoft has any sense, it will release branded smartphones and full-fledged computers too.

Computer users will always hate Microsoft for its imperfect Windows service, but the company can pick up some love on the back end by creating beautiful PCs. ●

Jon Phillips is the editor of PCWorld.

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Forum

Readers' responses to our November and December *Editor's Letter* editorials on Windows 8 indicate that many Windows users still view the new OS with skepticism. Also, readers commented on PC security issues and on Ubuntu Linux—the free, open-source OS that for some is an alternative to Windows.

Doubts Still Dog Windows 8

In his premier *Editor's Letter* [November], new editor Jon Phillips states, "Like it or not, the new OS is our computing future, and we all have a vested interest in making sure it succeeds."

I find that statement offensive in its ignorance. The most important advances in computing over the past several years have come from Apple and Google.

In his most recent *Editor's Letter* [December], he describes "5 Ways Windows 8 Beats iOS"—which read as if they came straight from Microsoft.

As a developer myself, I'm a fan of the maturity and standardization that Microsoft brought to the table. But Windows 8 is a product that no one asked for, that no one wants, and that no one will buy (in numbers that will make it successful).

Tim Markoski, Houston

After reading your latest *Editor's Letter*, I agree with the action points mentioned; however, I am less optimistic when it comes to the latest Redmond release. I just don't see this OS dominating the world for the next 20 months, let alone 20 years. I have been in tech support/network administration for over 15 years and have dealt with my fair share of end users and tech support–related issues. The problem is that a large percentage of mainstream users are still trying to grasp the Windows 7 concept, and I just don't see the average Joe making the hyperjump to Win 8.

One thing is for sure: The new release will maintain job security for many tech support people for a long time to come.

Marcus Shughart
Camp Hill, Pennsylvania

> To some extent, malware attacks are like vampires: If you invite them in, your antivirus suite is forced to shrug and let them bite
>
> *gyffesgyffeshcr8*
> *PCWorld.com forums*

I was involved with computers before Windows. Through Windows 95, XP, Vista, and 7, I was able to absorb most of the "improvements." Now Windows 8! I feel sorry for those trying to adjust to dozens of new terms such as *tiles*, *lock screens*, *charms*, *ribbon tabs*, and *group buttons*, and then trying to work with a screen designed largely for touching, not mousing. That's okay—I just bought a Microsoft book on Windows 8 and now have 737 small-print pages to catch up on.

Cliff Dale, Lincoln, Nebraska

The Start Button

I can't believe how happy I was to see Gregg Keizer's article on restoring a Start button to Windows 8 [*Forward*, December]! I purchased the Start8 app, and in minutes had my Start button back! Not only do you get the button, you can set your own picture image as the button, and it has other options as well. Anyone who dislikes the Windows 8 startup page and downloads this app will be pleased.

John A. Dular, Euclid, Ohio

The PC Security Toolbox

Regarding "The Ultimate PC Security Toolbox" [December]: This was a very informative article. Securing a network is extremely important. A properly set-up two-way firewall can mitigate many threats. Also, people should know not to use WEP security on their routers, which is ineffective because hackers can crack it.

T3CHT3CH
PCWorld.com forums

Next-Gen Wireless Router

Our Netgear R6300 router [reviewed in "802.11ac Routers: High Speeds, Long Range," *Reviews & Rankings*, December] is an absolute dream! We get excellent »

ILLUSTRATION GARY NEILL

connections throughout the house.

Even without 802.11ac adapters, signal quality and throughput are doubled. With them, throughput is up to ten times what it was on our old Wireless-N router

The ReadyShare functionality, available when I simply hook external drives into the Netgear box via two USB connections, is fabulous. I have a lot of videos loaded on drives, and they beam everywhere, with no buffering lags whatsoever. My DVD player is equipped with Wi-Fi, so it picks up the signal and plays everything on our big-screen TV, with excellent fidelity and perfect synchronization.

All the network clients can access the Internet, to pick up streaming content.

To me, this somewhat expensive setup is worth every penny!

OldPantry, PCWorld.com forums

Ubuntu Linux

Regarding "10 Reasons to Choose Ubuntu 12.10 Over Windows 8" [go.pcworld.com/ubuntuwin8]: It takes hardly any time at all to figure out Ubuntu. You can boot from the DVD or from the thumb drive. To set up the operating system, you start by clicking through an easy-to-navigate installer. Then you reboot, log in, and get ready to enjoy what's arguably the easiest-to-use operating system out there. Simple.

And you know what's faster than Windows on an SSD? Linux on an SSD

YellowApple, PCWorld.com forums

One thing that I like about Linux is that you have no viruses or antivirus applications to deal with, and if you need to install it on more computers really quickly, you don't have to worry about license fees or copyright issues.

amethystigor, PCWorld.com forums

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CORRECTIONS

IN DECEMBER'S *Reviews & Rankings* section, we published a photo of the Motorola Razr HD, not the product reviewed, the Razr M.

In December's *Staff Picks*, we should have identified the Brother printer as the MFC-J4510DW.

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Forward

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Surface Pro: More Than a Tablet

BY LOYD CASE AND TONY BRADLEY

Although pricing for the Surface Pro seems high, the tablet has Ultrabook-level specs and differs significantly from its RT sibling.

THE SURFACE PRO is doomed—or so it would seem, given Microsoft's prices of $899 (64GB) and $999 (128GB). But if you dig into the specs, it doesn't sound like a tablet. With a Core i5 CPU, 4GB of RAM, a USB 3.0 port, a memory card slot, and a mini-DisplayPort connector, the Surface Pro (slated for January 2013, though rumors hint it could arrive even before then) sounds more like an Ultrabook with touch and pen, but without a built-in keyboard.

How will buyers react to the Pro, considering that Microsoft's own Surface RT has been out for a while? No one questions whether the Surface RT is a tablet. It's priced like a high-end tablet, it's thin and light, and it has competitive battery life. But since that Windows RT tablet uses Nvidia's ARM-based Tegra 3 CPU, it can't run desktop programs. (See our review on page 48.)

Buyers may view the Surface Pro as just a pricey tablet as well. At the prices Microsoft is charging, shoppers who are not paying attention to its PC-like specs will likely ignore it.

Serious PC users who recognize the Surface Pro as a thinly disguised PC may grab one; they might also buy the Type Cover, or maybe a Bluetooth keyboard. Corporations may view it with interest too, as Microsoft has integrated enterprise-management capability. They'll be able to install all their software on it as well, since it's a full Windows 8 PC under the hood.

Pro vs. RT

If you're trying to decide between the Surface Pro and Surface RT, you should be »

aware of the benefits and disadvantages of each Windows platform. Since the Surface Pro isn't out yet, for the sake of comparison we looked at several other tablets running Windows 8 Pro.

Battery life: In this respect, Windows 8 Pro tablets compete with Ultrabooks more than they do other tablets. Our testing of the Samsung Series 7 Slate, for example, yielded more than 5.5 hours of battery life—and that's with an Intel Core i5 CPU rather than the more energy-frugal Atom chips used in many Windows 8 tablets.

Size and weight: Here the two platforms are a mixed bag, depending on the device model. At 1.9 pounds, the Samsung Series 7 Slate weighs almost half a pound more than the 1.5-pound Surface RT. According to a blog post by Panos Panay, general manager of Microsoft Surface, the Surface Pro will weigh less than 2 pounds too.

Buyers looking for a tablet may confuse the Surface Pro with its limited sibling, the Surface RT.

The Surface Pro has a number of business-friendly features.

The Dell Latitude 10, in contrast, is a Windows 8 Pro tablet listed at 1.47 pounds The difference is that the Samsung and the Surface Pro use a traditional PC architecture, while the Atom CPU in the Dell is an SoC (system on chip) that merges more functionality into less space.

Legacy software: This is where the balance shifts away from RT tablets. Windows 8 Pro behaves the same on a desktop, laptop, or tablet, and all of the Windows software you rely on will work on a Windows 8 Pro tablet.

Windows RT can run only apps developed for the Windows RT Modern interface. The volume and quality of available apps is underwhelming but growing rapidly. That won't do you any good, however, if you rely on an industry-specific application that runs only in the full Windows operating system. The difference, again, is that Windows RT is strictly for ARM-based processors, while Windows 8 Pro works with x86 processors.

Advanced features: Another area where Windows RT is no match for Windows 8 Pro is in more-advanced features and capabilities. A Windows 8 Pro tablet, for example, can join a Windows network domain, and be managed and monitored just like any other Windows computer.

An x86-architecture tablet running Windows 8 Pro or Windows 8 Enterprise can encrypt data via BitLocker. A Windows 8 Enterprise tablet also opens up another realm of possibilities, including various Microsoft technologies that are not available for Windows 8 Pro—never mind RT

Which One Wins?

If money is a factor, or if you want a tablet only to augment your Windows PC, the Surface RT or another Windows RT tablet makes sense. But if you want to run traditional software, or if you need a more robust device, a Windows 8 Pro tablet like the Surface Pro will serve you better.

In the end, what may kill the Surface Pro is its Surface name. It looks to be an impressive little Windows 8 PC. But if potential buyers see it as just a high-priced tablet, Microsoft could end up with a lot of excess inventory.

Additional reporting by Senior Editor Melissa J. Perenson.

PHOTOGRAPHS COURTESY OF MICROSOFT

Smartphones Could Separate Work and Play

IN LATE 2013, consumers will be able to buy smartphones that either come with native hypervisor software or use an app allowing them to run two interfaces: one for personal use, and the other for work.

The technology could help to address a growing issue as employees bring their personal mobile devices to work and use them to communicate with clients and access corporate data.

Two software companies, Red Bend and VMware, have signed agreements with phone makers to create dual-identity devices from some of today's most popular models.

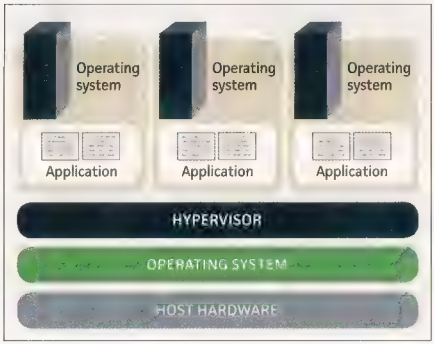
Smartphone virtualization, however, involves two different approaches, using either a Type 1 or a Type 2 hypervisor.

Type 1 is hardware-based technology that creates a second copy of the OS and runs both instances in two distinct regions of a processor. Type 2 runs as a guest OS on top of the host OS, not in parallel; the guest must communicate through the host OS to access the hardware.

Red Bend's Type 1 hypervisor will run on new mobile chips due in the next year. It has a partnership with ARM, which is developing a Cortex-A15 processor for mobile virtualization. ARM has also partnered with AMD to develop x86 processors optimized for virtualized smartphones.

Horizon Mobile, VMware's Type 2 product, will be available to U.S. users in 2013, either embedded on phones and awaiting activation or offered as a free, downloadable app. VMware has deals to embed Horizon Mobile on LG, Motorola, and Samsung devices. Motorola is already selling its Droid Razr M smartphone in Japan with VMware's hypervisor technology.

—Lucas Mearian

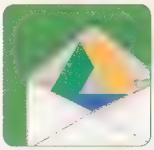


In a Type 2 hypervisor, a guest OS runs atop a host OS.

BRIEFS

Satellite Carrier May Open New Wi-Fi Channel

Globalstar has submitted a proposal to the FCC that could allow Wi-Fi users in the United States access to a fourth channel, Channel 14, in the most commonly used Wi-Fi band. The company proposes to offer the channel in conjunction with what it calls a TLPS (terrestrial low-power service). Part of its plan for the TLPS is to set up about 20,000 access points in hospitals and in public and nonprofit schools.



Gmail Integrates Google Drive Link Sharing

Gmail users can now share Google Drive documents without leaving the Gmail interface. To use the new feature, you have to opt in to Gmail's new compose window, where you'll see a Drive icon. Clicking the icon lets you insert a link to any file you have on Drive. The link will appear in the body of your message as the filename and a small file-type icon.

Western Digital Boosts Black Hard Drive to 4TB

Western Digital has sold enterprise-level 4TB internal hard drives for a while, but now consumers can buy a 4TB internal hard drive. Though the $399, 7200-rpm, 4TB Black drive is not as speedy as WD's 10,000-rpm VelociRaptor for workstations, it is plenty fast enough for gamers and media editors.

Mozilla Bakes Facebook Features Into Firefox 17

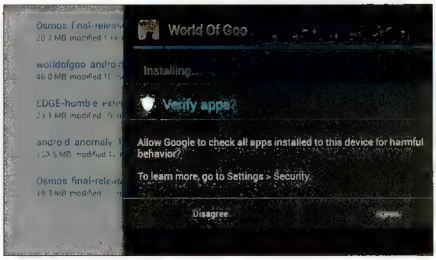
Firefox 17 lets developers integrate social networks with the browser. The first result of Mozilla's Social API, Facebook Messenger for Firefox, displays a sidebar that shows chats and updates, including new comments, without requiring the user to steer to Facebook's website. Additional tools range from message notifications to friend requests, accessible through new icons in the browser's toolbar.

Android 4.2: Google Makes a Sweeter Jelly Bean

GOOGLE'S ANDROID 4.2 debuted in mid-November with the Nexus 4 smartphone and Nexus 10 tablet, and is rolling out to other Nexus devices. (As of this writing, no word from non-Nexus phone and tablet manufacturers on a possible update.)

The second "Jelly Bean" release, Android 4.2 is a relatively minor update to version 4.1, but it packs significant new features and plenty of subtle polish. Here are a few of the biggest changes.

Multiuser support: Perhaps the most important addition is support for multiple users on tablets. Each user has a home screen, apps, wallpaper, and general settings that remain inaccessible to other users.



Protect yourself from malware by scanning installed apps.

Security: The new multilayered security system scans apps from third-party sources. If you opt in, it looks for malicious or potentially harmful code and alerts you to any concerns. It also watches for suspicious texting activity from installed apps.

Photo Sphere: Using the same tech as Google Street View, Photo Sphere lets you take and share interactive 360-degree images. The results are viewable only in Street View, on Google+, or on an Android device.

Lock-screen widgets: Android 4.2 adds support for live programs that run on your lock screen. It gives you five default options: Calendar, Digital Clock, Gmail, Messaging, and Sound Search. The lock screen also provides one-touch access to the Camera app, as well as to the Google Now intelligent assistant. Third-party app developers can create lock-screen widgets of their own, too.

—JR Raphael

TECH SPOTLIGHT: NEXT-GEN, APP-ORIENTED CAMERAS

CANON EOS 6D At $2100 (body only), the EOS 6D isn't Canon's most affordable DSLR, but it is the first to have in-camera Wi-Fi and geotagging features. The EOS 6D is also compatible with a Canon EOS Remote app for Android and iOS devices that lets you use a mobile device as a remote shutter release and viewfinder.
go.pcworld.com/canon6dts

SAMSUNG GALAXY CAMERA A solid 16-megapixel point-and-shoot, the $500 Galaxy Camera runs Android 4.1 (Jelly Bean), so you can run apps, edit pictures and video, and share what you've captured on Facebook or YouTube Optional 3G and 4G variants let mobile shutterbugs share shots from almost anywhere.
go.pcworld.com/galaxycam

SONY NEX-5R The $750 NEX-5R packs full-size DSLR features, including Wi-Fi, in a svelte frame. Unlike the other cameras here, it doesn't run Android, but it does let you download apps from Sony's PlayMemories Camera Apps store. Apps include Picture Effect+, which expands the camera's range of artistic treatments.
go.pcworld.com/nex5rts

NIKON COOLPIX S800C The $300, 16-megapixel s800c point-and-shoot camera runs Android 2.3 (Gingerbread) and sports a 3.5-inch OLED touchscreen. You can tweak your pictures with your favorite Android apps (downloaded via Google Play right on the camera) and share them instantly using the in-camera Wi-Fi.
go.pcworld.com/s800cts

4K Video Coming to a Home Theater Near You

THINK YOU'RE SEEING it all? Not when it comes to current digital video technology, whose resolution still falls short of that of 35mm film. To get closer to film quality, equipment makers have to pack in more pixels.

Roughly quadrupling the number of pixels found in current HDTVs, 4K technology gets its name from the width of the picture: approximately 4000 pixels. (Note that with 1080p, the "1080" refers to the vertical number of pixels; 4K video has about 2000 pixels vertically.)

The 4K standards are still developing. One standard, also called Quad Full High Definition or 2160p, maintains the 16:9 aspect ratio of HDTVs at 3840 by 2160 pixels; another standard, which expands to 4096 by 2160, is intended for the cinema. Either way, 4K—or Ultra HD, as the Consumer Electronics Association has dubbed it—boasts more than 8 million pixels, while a 1080p TV set has about 2 million.

You may have already seen 4K at the theater. Films such as *The Amazing Spider-Man* and *Prometheus* were shot with cameras capable of 4K resolution, so if you saw a digital projection, you might have encountered 4K video

Bringing 4K Home

Can you even perceive the extra resolution? In most cases, probably not. You really notice the difference between 720p and 1080p on 42-inch HDTV only if you are no more than 6 feet from it. With 4K, you'll need to be even closer than 6 feet with a TV over 55 inches. Anything smaller, or farther, and your eyes can't see the pixels on 1080p, so all that extra resolution essentially goes to waste.

Even so, manufacturers are rolling out 4K displays. For example, Sharp will start selling the industry's thinnest 4K monitor, a 32-inch LCD screen that measures just 3.5mm thick, in February. The monitor, based on Sharp's new IGZO technology, will sell for about ¥450,000 ($5500) in Japan. The screen will have two HDMI connectors (allowing users to connect a PC and home video equipment), as well as two small speakers.

TVs that can handle 4K content, or can upgrade existing content to 4K, are still very expensive. In October, LG started selling its $20,000 Ultra HD television through a single retailer in California, while Sony has been taking phone orders for its $25,000, 84-inch XBR-84X900 4K Ultra High Definition set. At press time, 4K TVs were set to be on view at the CES trade show held in January.

The biggest question for the new TVs is what sort of content will be available for them. Consumers who invest in Sony's set will have at least a handful of movies to watch on it: Sony announced that the LED TV will include a hard-disk server for pulling in movies in the new video format. The server will come preloaded with ten movies, including *The Amazing Spider-Man*, *The Bridge on the River Kwai*, *Taxi Driver*, and *Total Recall* (2012). A selection of short videos in 4K resolution is also included.

However, that's more of a temporary solution for the handful of big spenders who own Ultra HD sets. Hard-disk servers won't be practical for mainstream buyers; eventually the 4K format will need support from cable and satellite TV providers or from streaming video services, and that seems unlikely until more content creators start producing video in 4K.

—Michael Gowan and Jared Newman, with additional reporting by Jay Alabaster

Thanks to 4K video technology, movies such as *Prometheus* can offer stunning detail and clarity.

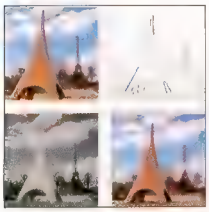
Lytro Adds Features and Filters

THE MAKERS OF the Lytro shoot-now-focus-later camera have added features.

With Perspective Shift, you can transform a picture captured with Lytro into a "living" image that a viewer can then manipulate left, right, up, or down. The effect will work on Facebook and Twitter without any special software, too. Also new are Living Filters (such as Film Noir, Crayon, and Carnival), which you can apply selectively to an image. You can click a foreground object, for example, to apply the filter to the background. You may also apply Perspective Shift or Living Filters to any Lytro photo taken before the features' introduction.

These additions, pushed to the camera's software as a free upgrade, follow on the heels of the introduction of manual controls—shutter speed, ISO sensitivity, a neutral density filter, and auto-exposure lock—by way of a free firmware update.

—John P. Mello Jr.



Lytro's Living Filters can affect parts of an image.

GEEK TECH

MakerBot Store Offers a 3D Photo Booth

Intended as a showcase for 3D printing, the new MakerBot Store in New York sells plastic models with a 3D scan of your face.

IF YOU'RE THE type who lets a little fame go to your head, the 3D Photo Booth at the new MakerBot Store in New York might be what you need.

Step into the 3D Photo Booth for a few minutes and get a 3D scan of your face, and the MakerBot folks will use their 3D printers to create a precise plastic model of a head with your face on it. The plastic heads go for $20, $40, or $60, depending on the size of the head (and your ego).

The 3D Photo Booth, developed with ShapeShot technology from Baltimore-based Direct Dimensions, costs $5 per scan, and the resulting file can accept further edits before being submitted for head creation.

A model of your head is just a digital scan away.

At the opening of MakerBot's new retail store in Manhattan's trendy NoHo district, MakerBot founder Bre Pettis said that the store was designed to introduce the public to the possibilities of 3D printing, a technology that has vastly reduced the cost of rendering nebulous concepts and ideas into working prototypes and models.

The in-store collection of 3D-printed products ranged from Christmas tree ornaments to multilevel doll houses with intricate detail and tiny furniture also created by MakerBot's 3D printers.

Pettis explained that the 3D-printing technology in MakerBot's products lays down layers of plastic so microscopically thin that you can create items with moving parts, such as model cars with rolling wheels or flexible bracelets. Since the PLA bioplastic cools quickly, he said, finished objects are safe to touch. Pettis also noted that almost any small item that someone can conceive via professional or consumer-grade 3D design software—or MakerBot's free MakerWare beta software for PC, Mac, and Ubuntu Linux—can be printed in durable plastic by MakerBot's 3D printers.

At the new store, a few MakerBot Replicator 2 Desktop 3D Printers, which look like large aquariums with machinery inside, printed jewelry items from scratch in a few minutes. You can purchase the $2199 replicator, which has a "resolution capability" of as thin as 100 microns, at the store: It uses 1-kilogram spools of PLA renewable bioplastic, which come in various colors and sell for $48 each.

Brooklyn-based MakerBot claims that it now has about a quarter of the world's 3D-printer market. *—Robert S. Anthony*

Visit the GeekTech blog at **go.pcworld.com/geektech** for hacks, tips, and hardware news.

FROM MAINSTREAM

How businesses are reinventing themselves with IBM SmartCloud.

A CHANGE IN THE ATMOSPHERE.
For a technology that's built to be invisible, cloud computing is making sweeping changes everywhere you look. From the way we work to the way we live, remote IT services are

Selling seafood fresh off the hook.

Engineering medicine from genomics.

Serving dynamic tennis action outside the venue.

putting unbelievable power right at our fingertips. But while more and more companies are discovering the extraordinary efficiency gains of the cloud, few are aware of how much potential is left untapped.

TO REVENUE STREAM.

In a recent study, 68% of firms using the cloud to disrupt markets expected to outperform their peers.

YESTERDAY THE BACK ROOM, TOMORROW THE BOARDROOM.
At most companies, the cloud is taken at face value—a conduit for increasing flexibility and reducing complexity. Meanwhile, forward-looking businesses are rethinking the cloud to enable them to profit from an explosion of new social, mobile and analytics capabilities. They're transforming business models, disrupting industries and getting to market in no time.

So conversations that were once held only in IT departments are now happening across the C-suite. And rapidly deployable resources like IBM SmartCloud give decision makers plenty to brainstorm about.

"Removing the burden of infrastructure really allows you to focus on improving your strategy and mission."
Marc Hoit, CIO, NC State

CLOUDS BUILT FOR RAINMAKING.
One such example is 3M. These early movers are using the cloud to analyze image design based on eye movement. Graphic artists everywhere can now upload their files and get instant feedback on what will most likely grab viewers' attention. It's a radically different proposition with untold, new market potential.

3M's Visual Attention Service is a cloud-based tool for analyzing designs like this ad.

RETHINK I.T., REINVENT BUSINESS.
In the trends of an expanding digital world, we see a perfect storm of innovation forming. And for today's industrious businesses, the cloud is ready to be capitalized on.
ibm.com/cloudtechnology

LET'S BUILD A SMARTER PLANET.

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Staff Picks

NEW PRODUCTS THAT HAVE OUR EDITORS DROOLING

Acer T232HL 23-Inch Touch IPS Display

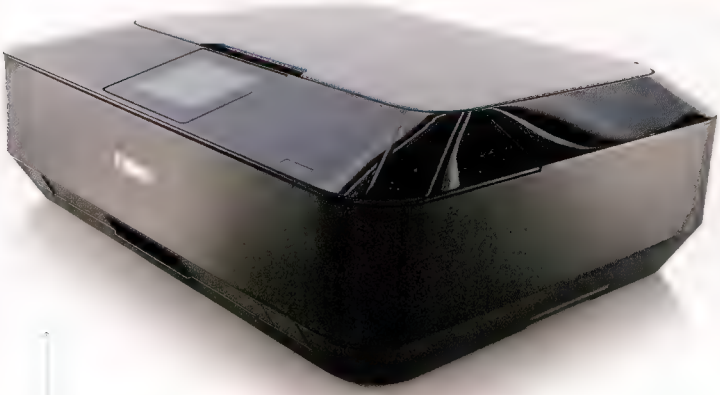
The $500 T232HL supports ten-point multitouch input to make the most of Windows 8's touch-friendly interface. The IPS panel has a resolution of 1920 by 1080 pixels and promises 178-degree viewing angles. Edge-to-edge glass protects the screen. With a transparent base and an asymmetrical stand, this monitor also has nice eye appeal. go pcworld.com/acert232hlsp

ScanSnap iX500

ScanSnap's newest document scanner comes packed with features to make going paperless as easy as possible. It can scan searchable PDFs and JPEGs to cloud services such as Dropbox, Evernote, and Google Docs, and it can scan files to iOS and Android devices with its mobile app. go.pcworld.com/scansnapsp

Barnes & Noble Nook HD+

Barnes & Noble ups the tablet ante with the Nook HD+, which has a 9-inch high-def display with a 1920-by-1280-pixel resolution. At $269 for the 16GB model, it's $30 cheaper than the Amazon Kindle HD 8.9; it's also lighter than its competitor, and it has no built-in ads. go.pcworld.com/nookhdplus



Canon Pixma MG6320 Wireless Inkjet Photo All-in-One

The MG6320 color inkjet multifunction has a streamlined control panel, a flip-up front lid for loading ink, and a glittery design that outshines basic black (it also comes in white). The absence of a rear paper tray reduces capacity, but eases paper loading and shrinks this $199 MFP's footprint. go.pcworld.com/canonmg6320

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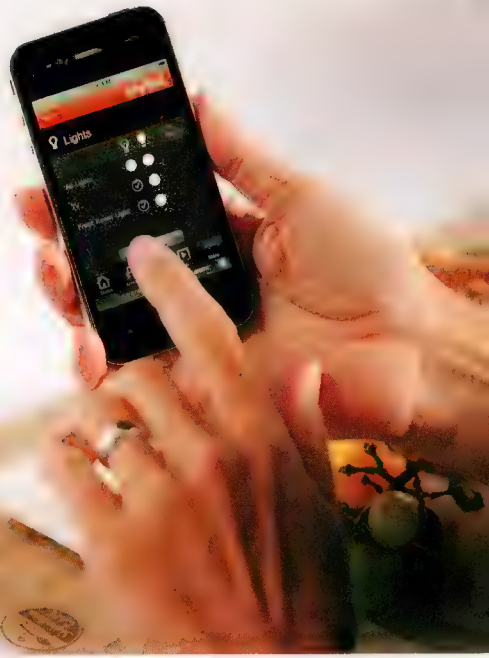

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Whether you're shopping for an all-purpose laptop or a portable that's especially light or fast, a few rules will help you select the ideal model

Three Simple Rules for Buying a New Laptop

How much RAM do you need in a portable system? How much storage? How important is the processor? Do your research before committing to a particular product.

BY RICK BROIDA

PHOTOGRAPH ROBERT CARD N

EVERY NOW AND then, family members, friends, and casual acquaintances ask me for advice when they're considering buying a new computer. "What should I get?" they inquire. "What do I need?" And these days, with increasing frequency, they wonder: "Should I buy a tablet instead of a laptop?"

Those are important questions, to be sure, but not difficult ones. A tablet can take the place of a laptop if all you do is browse the Web and read email. However, if you need to get any serious work done, whether for school or business or just everyday life, a laptop is still the smarter choice. A laptop gives you a keyboard, a bigger screen, copious amounts of storage, and compatibility with all your favorite software.

So what kind of laptop should you choose, and what specs and features should you focus on? You can make the buying process simple by following a few rules.

1. Get at Least 4GB of RAM

That's "four gigabytes of memory" for those who aren't accustomed to speaking PC. Anything less, and your system will run like molasses. This tip is something to keep in mind whenever amazing deals roll around—many bargain-basement laptops have only 2GB of RAM, which is simply not enough. »

2. If You Can Afford It, Choose an SSD

A solid-state drive contains no moving parts and therefore operates more quickly, generates less heat, and consumes less power than a traditional platter-based hard drive does

You'll pay a premium for an SSD and end up with less storage space, but how much capacity do you really need? Most folks I know rarely fill up more than 100GB. Though a 128GB SSD may seem like a downgrade compared with, say, a 500GB standard hard drive, the SSD's speed benefits alone are certainly worth investing the extra money.

3. Try Before You Buy

Brick-and-mortar tech stores may be few and far between these days, but you can still go to some places and browse laptops in person. And that's something you definitely should do.

Sure, you can shop online and make a choice based exclusively on the specs and price listed on a website, but you owe it to yourself to test-drive the machine's keyboard and touchpad. Make sure that both input devices are comfortable and responsive. Likewise, check out the laptop's screen: Is the surface glossy and therefore heavy on the glare? Whenever possible, try to lay your hands on a laptop before buying it.

One More 'Rule'

Notice that I didn't mention the laptop's processor in any of the tips above. Unless you're planning to perform heavy-duty video editing or to play a lot of graphics-intensive games, the processor just isn't the major factor it used to be. All CPUs are pretty fast nowadays.

As for brands, I have similar feelings: All of the major names are fairly good now. That said, it's wise to do your homework. A great starting point is *PC World*'s annual Reliability and Service satisfaction survey; turn to page74 to see our analysis of this year's survey results.

ON YOUR SIDE

I ORDERED AN Asus CM 6870 desktop from TigerDirect in July 2012. When I turned it on, no video came from the graphics card or computer outputs, in either digital or VGA mode. I sent the PC to Asus as per the warranty.

When I got it back, I was told that the power supply was replaced. This time the digital output of the graphics card failed to produce a normal boot sequence, but the VGA output worked normally. After about 8 hours of use, the VGA output stopped. I sent the PC back a second time.

When I received it again on September 25, 2012, I was told that the problems were caused by an OS error. However, the digital side of the graphics card still didn't produce a normal boot sequence; the VGA was fine. I then requested a new computer or my money back, and representatives told me to send it in a third time so that it could be fixed or declared not repairable.

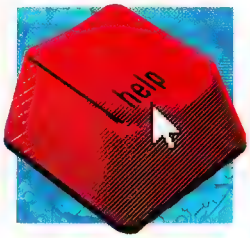
How many times must I send this computer back? Asus offered to extend my warranty for three months and have an engineer look at the PC this time, but since it has proven to be unreliable and Asus has twice been unable to figure out how to repair it, I want my money back or a new PC. Can you help?

—John Barna, San Francisco

ANNE KANDRA

OYS responds: We contacted Asus, and the company replied almost immediately. After researching the case, Asus agreed to provide Barna with a brand-new, upgraded desktop and to extend the replacement computer's warranty. A company spokesperson said that Asus is "constantly working to improve our customer experience" and promised to "ensure that [Barna] receives a quality product and a guarantee that Asus stands by its products and takes care of its customers."

Whether you're buying a car or a computer, there's no guarantee you won't end up with a lemon, but you do have a right to satisfactory warranty repairs for all purchases. For information from the FTC, visit go.pcworld.com/ftcwarranty.



Recall: Bose Dual-Voltage Cine-Mate II Home Theater Speakers

Bose and the U.S. Consumer Product Safety Commission have announced a voluntary recall of Dual-Voltage Cine-Mate II Home Theater Speaker Systems. A component in the bass module can fail when used outside of the United States in electrical outlets rated at 220 volts or higher, presenting a fire hazard. Consumers should stop using the system, unplug it, and contact Bose at 877/354-1004 (508/614-1842 outside the U.S.) for a free repair or replacement. See www.bose.com/safety for details.

Have you run into a problem with customer service, a warranty, a rebate, or the like for your gear? Email us at onyourside@pcworld.com.

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www.moneualusa.com

Moneual recommends Windows 7

HTPC

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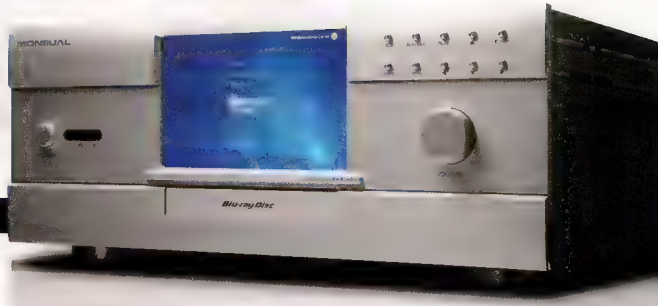

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MONEUAL 320SB

MONEUAL 312SB

MONEUAL 902SB

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SKEPTICAL SHOPPER

Get the Help You Need Without the Hold Time

Obtaining tech product support and resolving customer service issues can be aggravating. Turn to these sites and tips for faster results.

"YOUR CALL IS important to us. Please continue to hold." Have ten more aggravating words ever been uttered? Take heart: Some startups are trying to take the cuss out of customer support by providing free online workarounds.

Fast Customer: This sparsely designed site (fastcustomer.com) could not be simpler to use. Find a company in the list of more than 3000, click 'Have them call me', enter your phone number, and go about your business. A representative will call you back. The site lists a wait-time estimate.

Fast Customer's company list breaks out subcategories, such as "Dell: Tech Support" and "Dell: Customer Service," so you can direct your call appropriately. It has a forum for user comments and feedback, as well, plus apps for iOS and Android. You can also use the service via text.

LucyPhone: Can you guess how this site (lucyphone.com) got its name? Think acronyms: Let Us Call You. Select a number from the list or enter a toll-free number if you have it, and click *Start;* Lucy will call you back and patch you through. You'll probably still need to navigate the phone-tree jungle; if you are put on hold, however, you can press "**" ("##" on Google Voice) to leave a message for the agent who takes your call, or you can leave a callback number. Once an agent is on the line, Lucy will call you back. A mobile version is available for iOS and Android.

GetHuman: Although GetHuman (gethuman.com) can connect you to the appropriate customer service department (courtesy of LucyPhone), it also lists other methods to contact a company, including phone numbers and email addresses.

Better still, the site ranks each contact method's effectiveness, based on user data. For example, when I checked Facebook's listing, it offered about half a dozen contact options. You'll find average wait times and user forums, too.

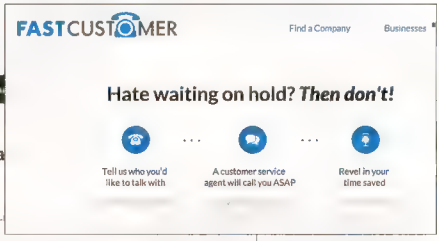
GetHuman is also available as an app for Android and iOS.

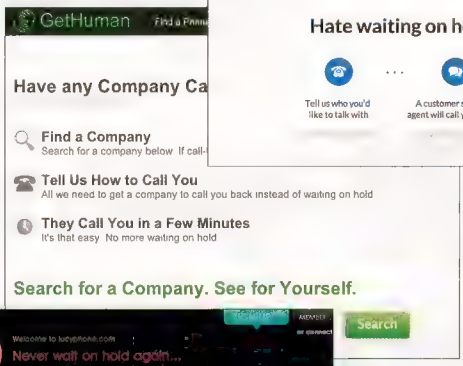
It's worth noting that companies are starting to offer their own callback services. For instance, Google's Play Store has a "Click 2 Call" option for some product categories.

Tips for Resolving Support Issues

Ready for that call? Here's how to resolve issues efficiently:

- Research your problem thoroughly first. Try googling the issue, or search the company's customer forum.





Several online services can help you get in touch with a company support representative at a convenient time.

- Collect all information and documentation, including email, call records, and invoices.
- Take careful notes of all conversations. Ask for the agent's name and contact information, and find out if you can contact the agent directly.
- Explain the problem, and spell out the exact resolution you want. Stick to the relevant details.
- Finally, a reminder about honey, flies, and customer service: Even if you are apoplectic with righteous outrage, take a deep breath, and avoid taking your frustrations out on the agent. A direct but consistently polite demeanor is best.

—Anne Kandra

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Learn why Clabby Analytics says IBM Flex System is the best blade offering in the market. Download the paper at ibm.com/systems/no_compromise

[1] Based on IBM testing and documented in IBM System x® Virtualization Server Consolidation sizing methodology IBM Flex System x240 supports 27X more Peak Utilization Virtual Machines (VMs) than previous generation BladeCenter® HS22V

[2] Based on IDC white paper "The Economics of Virtualization: Moving Toward an Application-Based Cost Model," Michelle Bailey, November 2009, http://www.vmware.com/files/pdf/Virtualization-application-based-cost-model-WP-EN.pdf
Optional IBM Flex System storage node available fourth quarter 2012

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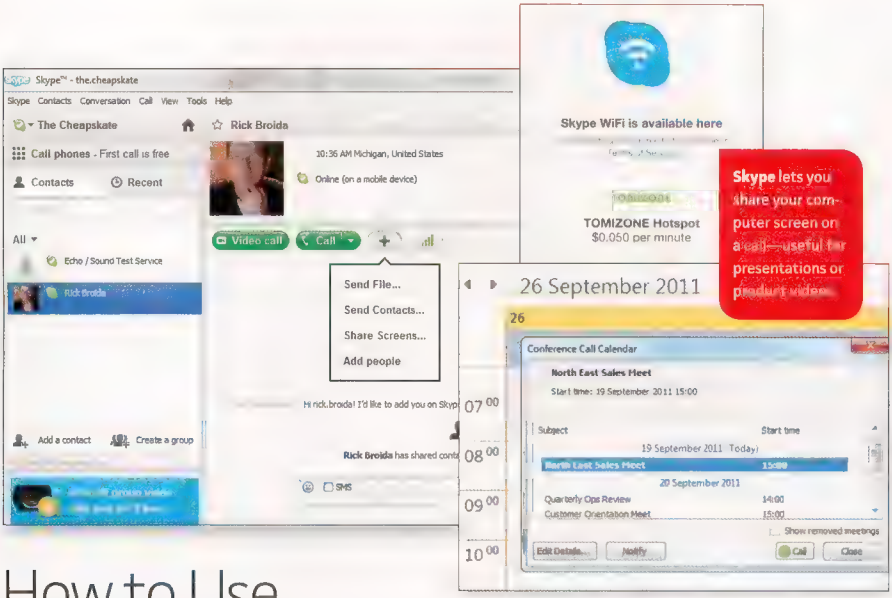


How to Use Skype to Help Your Business

Put Skype to work, and turn it into a powerful tool for saving money, streamlining meetings, and improving your overall business.

BY RICK BROIDA

SKYPE IS SO popular that some people use its name as a verb. Yet most people use Skype only for making free voice calls, and for occasional video chats. That's a shame, because Skype is a powerful business tool. A Skype-powered videoconference can take the place of a business trip, not to mention the free Skype-to-Skype calls you can make to overseas suppliers and clients.

But you can also use the service to show someone a PowerPoint deck, or to dial in to conference calls without all the usual hassles. And you can even add a Skype button to your website to give your customers a free and easy way to contact you.

Sound good? Let's begin.

Share Your Screen

Skype lets you show not only yourself (on a video call), but also your computer screen. You can share a presentation, show off a webpage, or demonstrate how to use a new product.

Start a video call or a Skype-to-Skype voice call from the free Skype client for Windows or Mac. Once you're connected, click the + icon in the call bar, and then choose *Share screens*. (If you want to see the other person's screen, he or she will have to repeat this process at their end.) In the pop-up box that appears, click the *Start* button; that will share your entire desktop. If you want to share only a specific window or program, click the down arrow and select *Share window*. Choose the window you want to share, and then click *Start*. Now the person at the other end can see what you see. If you want to do the same thing with a group, you'll need a Skype Premium account.

Record Your Calls

Call recording serves a valuable, legitimate purpose in business. As long as all parties agree to the recording (and in some states, even that isn't a requirement), a recorded call can, among other things, help you revisit important talking points and create a written transcript of a conversation with a client.

Several Skype apps for Windows can record your calls. MP3 »

Skype Recorder, for example, can start recordings automatically and manually, and it works with several Skype services. It can also split the recordings into different tracks: one for the caller, and one for the person called. And it's free.

If you want something even more versatile, the $50 IMcapture adds video-call recording to the mix, and it's compatible with both Windows and Mac.

Join Conference Calls With Ease

You probably know the hassle-packed drill it takes to get on a conference call: Find the call details in your appointment calendar or confirmation email, dial the number, enter the passcode, and so on.

If you're an Outlook user, check out Plantronics' InstantMeeting. This free add-on culls conference calls and dialing details from your Outlook calendar, reminds you before a meeting is about to start, and provides one-click dialing via Skype. A meeting organizer can use InstantMeeting to notify attendees of a delay. It even allows you to redial a dropped call with a single click.

InstantMeeting is also available for Android, BlackBerry, and iOS, though the apps don't pair with Skype.

Add a Skype Button to Your Site

Want to offer customers a way to call you for free? Normally that would mean setting up a toll-free number, which isn't exactly free for you. Fortunately, you have another way to extend this option for sales or service calls, and that's by adding a Skype button to your site.

After choosing a button style (two are dynamic, meaning they will change in accordance with your Skype status, such as online or offline), you simply paste the provided HTML code into the appropriate spot on your site. You then add some descriptive text explaining how this button enables customers to contact you.

For links to the services and add-ons mentioned, and more tips, visit go.pcworld.com/bc13-2skype.

SIMPLY BUSINESS

Great Google Tools for Business

YARDENA ARAR

Google's ever-expanding offerings include all sorts of goodies for business users. Here are a few of them.

SINCE GOOGLE IS ubiquitous in our everyday digital lives, it's easy to overlook the many tools it offers that have a business slant.

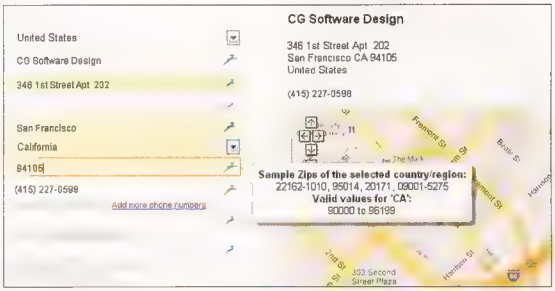
Here are three serious Google services that can boost your productivity, get your team on the same page, and market your company.

For links to the services, and for a discussion of other business-related Google tools, visit go.pcworld.com/sb13-2google.

Google Places for Business: With this service, you can add salient details about your business—not just name, address, and phone number, but also business category, hours of operation, types of payment accepted, and areas served—to Google's database, for free. The information, including a small map, appears in relevant Google search results. Google Places previews what your listing will look like even as you provide the information in a questionnaire. (Google does encourage you to buy an AdWords ad.)

Google+ Pages: This is Google's equivalent of a Facebook page, but with customization options designed for businesses. You start by choosing the type of business, and then you add content such as a cover photo, your logo, and a brief description. As the creator of the page, you can designate other administrators or even transfer ownership of the page. Use it to promote your business with photos, videos, news, links to Hangouts, and more.

Google+ Hangouts: The Hangouts chat rooms have features that make them useful for business meetings. You can see and hear up to ten participants, collaborate on Google Drive documents, share your screen, or run third-party apps. A Hangout may not match commercial Web-conferencing tools such as WebEx or GoToMeeting, but the features it does have may be all that a geographically dispersed team needs—and it's free.



Add information to Google's search result for your business—and preview it, too.

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ORGANIZATION

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TECH AUDIT

Five Reasons Microsoft Lync 2013 Matters

TONY BRADLEY

LYNC 2013 HAS a variety of benefits that businesses can take advantage of to make internal and external communications more effective and efficient.

Lync—which comes bundled with Office 365 business subscriptions and was formerly called Office Communications Server—is Microsoft's server platform for unified communications. Lync ties real-time presence information with instant messaging, videoconferencing, and voice communication, and it integrates with Exchange email and Microsoft Office applications.

Here are five reasons businesses can benefit from adopting the new Lync 2013.

1. HD videoconferencing: Lync 2013 delivers support for 1080p HD resolution for videoconferencing, so participants have a sharp, clear display. Lync 2013 uses standard video codecs like H.264 SVC to provide compatibility across a broader range of platforms and devices, and greater flexibility in video delivery.

2. Mobile apps: Microsoft has developed Lync Mobile apps for Windows Phone, iOS, and Android, so Lync communications are available almost universally. The Lync Mobile apps allow users to instant-message, call, or join a Lync Meeting from virtually anywhere.

Lync 2013 has some new tricks up its sleeve that make it a great communication and collaboration tool for businesses.

This cross-platform approach from Microsoft is notable. Obviously the company would prefer that everyone choose Windows Phone, but the reality is that Windows Phone has relatively little market share. Microsoft is wise to provide tools that make sure customers continue to rely on Microsoft software no matter what platform they may be using.

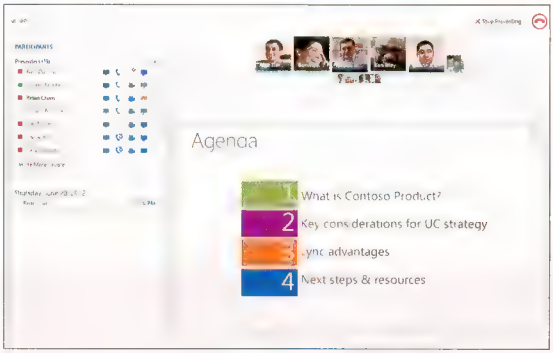
3. Web app: Microsoft's Web app for Lync 2013 lets users join a Lync Meeting from Windows or Mac OS X via a Web browser and still have access to all of the features of Lync, including HD video, VoIP (Voice over IP), instant messaging, and desktop sharing.

4. Skype federation: As great as Lync is, you will have partners, vendors, and customers who don't use it. But Skype is a very popular and free communications tool (see page 29)—and Microsoft owns it, too. Lync 2013 extends communications to Skype with presence, instant messaging, and voice capabilities.

5. Office 365: Small and medium-size businesses (and larger businesses, too) can take advantage of Lync 2013 as part of the new Office 365. The standard Office 365 Home Premium is $100 per user per year. But for an additional $50 per user per year ($150), Office 365 Small Business Premium includes Lync—and Exchange and SharePoint, as well—all hosted and supported by Microsoft.

Office 365 is arguably the most compelling aspect of Lync 2013. Other videoconferencing options, such as Cisco Webex or Citrix GoToMeeting, can be costly and provide only the videoconferencing piece. Office 365 makes sense for most business customers, and the inclusion of the Lync, Exchange, and SharePoint services for only an additional $50 per user per year makes Office 365 an even greater value.

Microsoft has also improved the look and feel of Lync 2013 significantly—making it easier to facilitate Lync Meetings, and presenting a cleaner, more intuitive interface for users. ●



Lync 2013 is Microsoft's server platform for unified communications.

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so I protect them.

Paul - Restaurant Critic

KASPERSKY lab INTERNET SECURITY

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usa.kaspersky.com/paul

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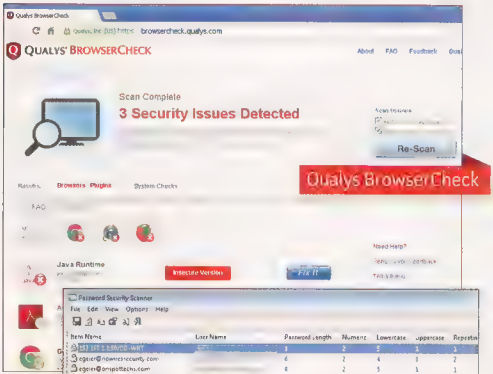
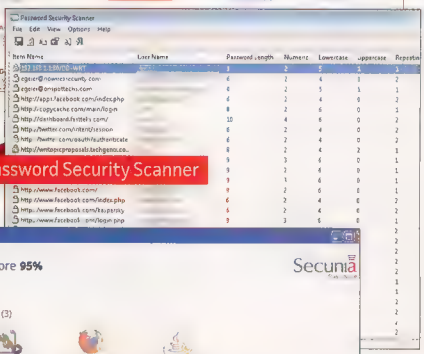
Beyond Antivirus Software: Eclectic PC Security Tools

Relying on an ostensibly comprehensive antivirus suite just doesn't cut it anymore.

BY ERIC GEIER





ANTIVIRUS SOFTWARE IS crucial for combating viruses, malware, and hackers, but simply installing an antivirus program isn't enough. You also need to use strong passwords; keep your system, software, and Web browser plug-ins current; and use a good firewall.

Luckily, a number of tools and services go beyond what antivirus programs offer, performing security audits of vulnerabilities that the big-name software packages miss. Here are five to check out.

Qualys BrowserCheck

An outdated browser or plug-in can give intruders a security hole to exploit, so keeping your Web software up-to-date is a must. Qualys BrowserCheck (browsercheck.qualys.com) is a free service that scans your browser to see if you're running old or insecure versions of popular plug-ins or add-ons such as Adobe Reader, Adobe Flash, Java, and Windows Media Player.

In Windows, Mac, or Linux, you can run a quick scan from any of the popular browsers. Once Qualys finishes the scan, it lists the plug-ins it examined and whether your versions of them are insecure; it also links you to the newest plug-in versions.

Alternatively, you can conduct a full scan after installing the Qualys BrowserCheck plug-in, which supports Internet Explorer, Firefox, and Chrome on Windows—it offers no Mac or Linux support. This full scan checks all supported browsers you have installed, and can also check for other system vulnerabilities. At the end of the process, Qualys displays a list of the results.

Secunia Personal Software Inspector (PSI)

Secunia Personal Software Inspector (go.pcworld.com/secunia) is a free download that scans your PC for vulnerabilities. If PSI finds one, it will try to download and install relevant updates automatically. Otherwise, it helps you fix the issue manually.

PSI notifies you via its system tray icon if other applications require a manual update. You can open the utility to find your Secunia System Score, a list of programs that need updating, and a list of the software that it found to be up-to-date. If your score is below 100, you'll find icons for the vulnerable programs, which you can click on to resolve the issue. »

Password Security Scanner

NirSoft's free Password Security Scanner utility (go.pcworld.com/pss) scans for passwords stored by Windows programs and Web browsers, and tells you how strong they are. You can then strengthen the weak ones. (For tips on creating strong passwords, visit go.pcworld.com/3102sa1.) Though you don't see each actual password, you do see the username and site associated with it. After you install the utility, it scans your PC and shows details about your passwords, such as their length, the types of characters used, and their strength.

ShieldsUp

ShieldsUp (go.pcworld.com/shieldsup) is a free, Web-based port scanner that tests your Internet connection for possible security holes, such as incorrect firewall settings. ShieldsUp scans all ports, or you can instruct it to scan a specific port or range of ports, including File Sharing ports (to make sure you're not offering direct access to your files) and Common Ports (to check the most frequently used ones). In addition, you can evaluate your Web browser headers for privacy and tracking issues, and test to see if your PC is susceptible to spam.

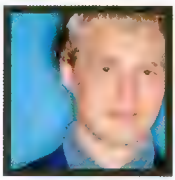
If results show open ports, you can investigate your PC's or router's firewall settings and try to close or secure them.

Belarc Advisor

Belarc Advisor (www.belarc.com) is free for personal use, and scans your PC's hardware, network connections, and software for insecure settings and other weaknesses. Its browser-based report, geared more for techies than home users, lists detected issues along with links to instructions for fixing them. It shows your overall security status via three scores: Security Benchmark Score, Virus Protection, and Microsoft Security Updates. Click a score to see details on your hardware specs, user accounts, peripherals, networking, and more.

BUGS & FIXES

Mozilla Releases Firefox 17, Patches



JAMES MULROY

Also: Adobe issues security updates, and Apple fixes iOS, Safari, and more.

MOZILLA CONTINUED ITS rapid pace of development by releasing Firefox 17 and Thunderbird 17, and by subsequently patching security holes in those versions. Around the same time, Adobe issued a fix for ColdFusion and patched bugs in Flash Player. And Apple released iOS 6.0.1 and Safari 6.0.2 to correct security issues.

Mozilla Introduces a New Firefox and Addresses Bugs

Mozilla released Firefox 17, along with 16 security advisories. It identified and fixed numerous memory safety bugs as part of its patches, including several issues that attackers presumably could exploit to gain the ability to run code remotely on an affected system. Critical-rated bugs include use-after-free vulnerabilities and buffer overflows; these bugs could allow attackers to execute code remotely on your computer or cause a system crash, effectively locking you out of your machine.

For more information, visit go.pcworld.com/3102bf1, go.pcworld.com/3102bf2, and go.pcworld.com/3102bf3.

Adobe Produces Flash Player and ColdFusion Patches

Two Adobe security bulletins address issues in Flash Player and ColdFusion that could cause system and application crashes, and let an attacker take control of your system. The Flash Player updates fix buffer overflows, as well as flaws that could let a hacker run malware on your PC. The ColdFusion update fixes a vulnerability that could allow an attacker to cause an application crash on your system.

To learn more details and download the updates, visit go.pcworld.com/3102bf4 and go.pcworld.com/3102bf5.

Apple Corrects Multiple Flaws

Patches for iOS, Safari, and QuickTime address bugs that involve information disclosure, JavaScript handling, use-after-free flaws, and buffer overflows. The iOS 6.0.1 and Safari 6.0.2 updates include patches for two issues that could cause applications using the WebKit browser engine to quit unexpectedly when you visit a maliciously crafted website. The QuickTime 7.7.3 update fixes buffer overflow flaws in QuickTime that could cause an application to crash or allow for arbitrary code execution.

To learn more, browse to go.pcworld.com/3102bf6, go.pcworld.com/3102bf7, go.pcworld.com/3102bf8, and go.pcworld.com/3102bf9.

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Samsung Printers Have Security Flaw

PRINTERS MANUFACTURED BY Samsung have a backdoor administrator account hard-coded in their firmware that could let attackers change a printer's configuration, read its network information or stored credentials, and access sensitive information passed to the printer by users.

The hard-coded account does not require authentication and can be accessed over the Simple Network Management Protocol (SNMP) interface of the affected printers, the United States Computer Emergency Readiness Team (US-CERT) said in a security advisory. SNMP is an Internet protocol commonly used to monitor and read statistics from network-attached devices.

The SNMP account found in Samsung printers has full read and write permissions and remains accessible even if users disable SNMP through the printer's management utility, US-CERT says.

It's not just Samsung-branded printers that contain the administrative account, but also some Dell-branded printers manufactured by Samsung.

US-CERT says that, according to Samsung, models released after October 31, 2012, are not vulnerable. "Samsung has also indicated that they will be releasing a patch tool later this year to address vulnerable devices," US-CERT says.

US-CERT recommends that users follow security best practices and restrict access to the affected printers. Users should allow access to their SNMP interfaces only from trusted hosts or network segments, to limit the ability of attackers to use the hard-coded credentials, the organization advises.

—Lucian Constantin

PRIVACY WATCH

Disconnect Foils Online Tracking

This free tool stops social networks from tracking your activities.

ALEX WAWRO

SAVVY WEB SURFERS know that many websites keep track of your browsing by leaving chunks of code, called *cookies,* in your browser. Services such as Facebook use them to authenticate you as a valid user while you're on that site.

But companies can also use cookies to track what you're doing when you visit other sites: For example, if you've logged in to Facebook and then visit the Huffington Post without clearing your cookie cache, a widget on the Huffington Post's front page will show you a live feed of stories your Facebook friends are reading. Facebook, in turn, uses that data to show you ads based on the sites you've been visiting.

If that sort of personal touch makes you uncomfortable, try Disconnect (disconnect.me), a free browser extension for Chrome, Firefox, and Safari that blocks online trackers. Unlike most browser extensions that anonymize your browsing history, Disconnect monitors the data you exchange with sites and selectively filters out traffic from services that track your online activity—without blocking the sites themselves.

Visit Disconnect.me and click the big blue *Get disconnect* button; then install the extension in your browser. A small Disconnect icon will appear in your toolbar showing the number of requests you receive from trackers on sites you visit; the tool blocks tracking by Facebook, Google, LinkedIn, Twitter, and Yahoo by default, but you can click the icon to selectively block or allow tracking by one or more services.

Don't worry about Disconnect messing up your experience when you actually want to visit Facebook or Twitter, either; during testing I was able to keep my browsing history private without compromising my ability to access any of the services that Disconnect filters.

Protection on Public Networks

Disconnect also helps you stay secure while you're on public Wi-Fi networks by making you access the HTTP Secure (HTTPS) encrypted versions of Facebook, Gmail, LinkedIn, Twitter, Yahoo, and YouTube (though some of these services—notably Facebook, Gmail, and Twitter—already serve up HTTP Secure pages by default). If you don't use encryption while surfing the Web over Wi-Fi, someone else on the network can obtain your username and password.

Disconnect won't keep you totally anonymous, but if you use it along with an anonymizing virtual private network like Tor (www.torproject.org), it will be much harder for anyone to know who you are or what you're doing online.

ILLUSTRATION GARY NEILL, PHOTOGRAPH ROBERT CARDIN

MONEUAL

www.moneual.com

One simple change in your cleaning habits can make all the difference

Know your home needs to be vacuumed but have been unable to find the time to fit it into your busy schedule? Don't let your schedule get in the way of a clean home any longer! Leave the vacuuming and sweeping entirely up to the Rydis MR6550. The Rydis MR6550 effectively vacuums all areas in your home including areas that standard vacuums cannot reach like underneath beds and other large furniture.

Start a daily cleaning regiment that requires no time or labor – just the touch of a button – with the Rydis MR6550.

Moneual Rydis MR6550

ULTRA MOTOR
Powerful BLDC motor provides superior suction power

HEALTHY CARE
Multi layered filter traps dust and allergens, detachable mop further sweeps and cleans

AUTO CLEAN
Variety of cleaning modes cater to every type of home and lifestyle

SMART ECO
Sturdy and long lasting body composed of eco-friendly materials

SLIM DESIGN
Slim 3.23" height allows easy access underneath furniture

Bio Clean System | BLDC Motor/ High-efficiency Filter/ Eco-friendly Battery

The Rydis MR6550 utilizes a powerful cleaning system to provide a thorough and efficient clean during every clean cycle.

RYDIS

Reviews & Rankings

Aaxa's P4-X projector comes bundled with a remote and a tripod.

Pick a Pico Projector: Four of the Best and Brightest From the New Crop

BY YARDENA ARAR

These tiny devices can project presentations, slideshows, and video to admiring audiences.

LIGHTWEIGHT, handheld Pico projectors can display a bright image on a screen or wall in an average-size room, even in moderate light.

We looked at four models weighing between 6 and 15 ounces, priced at $230 to $450, and with resolutions of up to 1024 by 600 pixels.

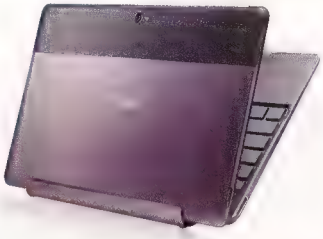
Pico projectors are great for business travelers who make presentations to small groups.

Aaxa P4-X

The $291 Aaxa P4-X comes with an HDMI input, so you can use it with Blu-ray players and other high-def video sources. Though it offers no on-board storage, it sports a MicroSD card slot and a short cable (Mini-USB to USB) that you can use to connect a USB flash or hard drive. But the P4-X doesn't run Windows CE or provide viewers for Microsoft Office docs; instead, it has two media players and viewers that support popular image, music, and video file formats. Its only document support is for TXT files.

As a result, businesspeople who want to project a PowerPoint presentation or a Word document will likely be tethered to a laptop that can run Office applications, using one of the P4-X's supported video

INSIDE



48 Asus VivoTab RT

54 HTC Windows Phone 8X

56 Google Nexus 10

outputs: VGA, composite video, or HDMI. Aaxa provides adapter cables for all of the video sources it supports.

In fact, Aaxa is very good about including accessories in general. The P4-X comes with a small infrared remote control (an infrared sensor sits on the rear of the projector) and a sturdy tripod.

The P4-X weighs 12.8 ounces, which is a bit heavy for a pico projector; its dimensions (5.6 inches wide by 2.7 inches deep by 1.2 inches high) are about average for this category. Its LED-backlit DLP engine projects images rated at 80 lumens when connected to the AC adapter, and 60 lumens when running on its lithium-ion battery. The battery is rated to last for 75 minutes between charges. The P4-X's native resolution is 854 by 480 pixels, and it can accept input resolutions of up to 1280 by 768—fairly standard capabilities today.

Atop the machine are a return button and a directional keypad (four arrow buttons surrounding an OK/select button). When you fire up the projector, the first screen you see shows icons for video sources and settings. In selecting a video source, you also choose a media player/viewer that will display the available appropriate files.

Controls for playing a video include fast forward/rewind, next/previous, repeat, and mute. I preferred the remote's button-based options.

The P4-X can decode AVI, MP4, and SMV video; MP3, OGG, WAV, and WMA audio; BMP, GIF, and JPG still images; and TXT files. It can throw a 50-inch image at a distance of 8 feet, though in my tests slightly smaller images looked far crisper. Overall, the projector's images looked bright and colorful (you can make minor adjustments to color quality in the settings).

Audio from the 1-watt speaker was predictably lackluster in my hands-on testing; however, you can easily beef up the sound by connecting external speakers to the projector's headphone jack.

Acer C120

The Acer C120 is small, bright, and attractively priced ($230), but it's not very versatile: It projects only the screen of a USB-connected Windows PC, and it doesn't support Macs.

The C120 is bare-bones in other ways, too: It lacks speakers and a power on/off button, and the lamp lights up whenever you plug the projector into a power source. The USB cable (a Y cable with two jacks to support either USB 2.1 or USB 3.0), an AC adapter, and a rather flimsy fabric case are the only accessories included. Apart from a temperamental focus wheel, the projector has no hardware controls. Those design decisions may have helped Acer keep the C120's weight down to a minuscule 6.3 ounces and its dimensions to 4.7 by 3.2 by 1.0 inches, but I'm not convinced that the trade-offs were worth it. »

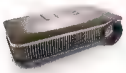
MORE ONLINE

For complete reviews of the four projectors covered here, see **go.pcworld.com/picoprojectors.**

The Acer C120 is extremely light but not very versatile.

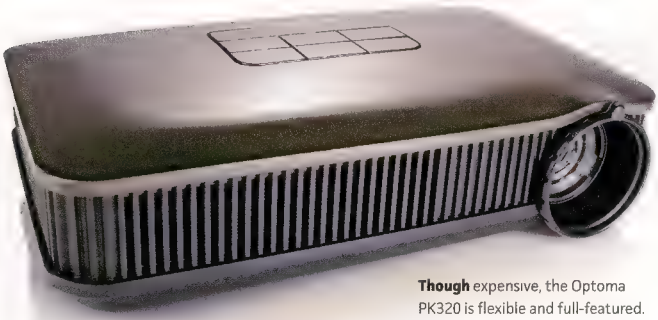
PHOTOGRAPHS ROBERT CARDIN

LIGHT, HANDHELD PICO PROJECTORS

MODEL	Rating	Pros	Cons
Aaxa P4-X **$291** go.pcworld.com/aaxap4x	★★★½☆ VERY GOOD	• Petite and attractively priced • Integrated media encoders • Many accessories	• Doesn't support Microsoft Office • No onboard storage • Mediocre battery life
▸ The Aaxa P4-X has great connectivity and media playback features, and lots of accessories, at a reasonable price.			
Acer C120 **$230** go.pcworld.com/acerc120	★★★ GOOD	• Extremely light (6.3 ounces) and portable • As bright as any other current pico projector • Relatively inexpensive	• Can project only from a USB-connected PC • Tricky to set up • Incompatible with Macs
▸ The Acer C120 can do just one thing well: It projects what's on the screen of a USB-connected Windows PC			
 BEST BUY **Optoma PK320** **$374** go.pcworld.com/optomapk320	★★★★ VERY GOOD	• Exceptionally bright • Well designed • Lightweight (8.3 ounces)	• Somewhat pricey • Doesn't include all cables • Much less bright on battery
▸ The Optoma PK320 delivers outstanding brightness, connectivity, and file-format support in a small package.			
3M MP220 **$446** go.pcworld.com/3mmp220	★★★★ VERY GOOD	• Very bright, even on battery • High resolution • Integrated storage, Android OS, and apps	• Expensive and fairly heavy (15 ounces) • Remote control and video cables cost extra
▸ The 3M MP220 produces high-resolution images at a high level of brightness, even on battery power.			

You must use your computer to control the projector's display resolution and power consumption (standard or eco). The applets for these controls should install automatically on your PC when you connect the two. In my tests, however, I had to repeat the procedure multiple times (including a couple of reboots) before it worked. Until the computer recognizes the C120, the unit will project only the Acer logo.

Once the installation succeeded, the projector's DLP engine immediately threw a large, bright image of my Windows 7 ThinkPad's screen on the wall from a good 10 feet away. Initially it also fiddled with the laptop's display resolution, but switching that back wasn't difficult. The C120 natively displays a resolution of 854 by 480 pixels, and it supports inputs of up to 1280 by 800—typical for a recent pico projector.



Though expensive, the Optoma PK320 is flexible and full-featured.

Image brightness varies according to how you've set up the C120: Acer rates the projector at 100 lumens when it's running on AC power, but you have several ways to connect the USB cable. The company recommends using USB 3.0 for best performance (which makes sense, given that standard's superior bandwidth).

When you plug in the second USB cable, the projector will take advantage of the additional power to produce a slightly brighter image. Acer rates the C120's brightness with a USB-only connection at 75 lumens—plenty for a small, well-lit room.

Optoma PK320

The $374 Optoma PK320 may be small, but it's no lightweight when it comes to features for business and leisure. It's the only projector in our review group to come with an analog VGA cable (to support older laptops), a remote control, and a built-in viewer for Microsoft Office documents.

In addition to the VGA cable, Optoma gives you an AV cable and a short USB cable; but an HDMI cable is an extra-cost option. The PK320 also has ports for Mini HDMI, AV, and Mini-USB connections. The USB serves only to transfer data from a computer to the PK320's 2GB of onboard storage. For more storage, you can slip a card into the projector's MicroSD card slot. Among the four pico projectors reviewed here, the PK320 has the most complete connectivity and stor-

PHOTOGRAPHS: ROBERT CARDIN

age lineup, which helps to justify the unit's high price.

Weighing 8.3 ounces and measuring 4.7 by 2.7 by 1.2 inches, the PK320 is one of the more petite models we examined; it's also one of the most pleasingly designed, with curved corners and a shiny black case. Its navigation keypad buttons light up in blue for several seconds when you press any of them.

The DLP-based PK320 has a native resolution of 854 by 480 pixels and supports a maximum input of 1280 by 800. Optoma rates the unit's brightness at 100 lumens when it's connected to a wall outlet, and at 25 lumens when it's on battery power. In my tests, images projected on battery power looked good at sizes no larger than a couple of feet (diagonal) in a brightly lit room. When connected to the AC adapter, the PK320 projected bright and large images.

Powering on the PK320 brings up an attractive menu that provides icons to help you choose a media viewer (music, video, photo, or Office), a video source, or settings. This Optoma model also provides more image-adjustment choices, including a gamma-control option, than most pico projectors do.

The PK320 can decode many file formats, including ASF, AVI, CMB, FLV, MOV, MP4, 3GP, and WMV video, BMP and JPEG still images; AAC, ASF, FLAC, MP3, OGG, RA, WAV, and WMA audio, Excel, PowerPoint, and Word Office files (both legacy and XML), and PDF documents. As on other projectors with 1-watt speakers, the audio is weak, but plugging speakers into the headphone jack is a breeze.

3M MP220

Weighing nearly 15 ounces, the brick-shaped 3M MP220 is bulky for a pico projector—in fact, it's more than twice as heavy as many competitors. And at $446, it's pricey, too.

3M's MP220 is bulky and pricey, but has a high native resolution.

But it also boasts the highest native resolution of the four projectors we tested for this roundup—1024 by 600 pixels—and it can accept video sources with resolution of up to 1440 by 900. This means you'll be less likely to have to reduce the screen display of a laptop to use it.

In fact, you might not need to connect it to a laptop at all. This projector's built-in Android software and 1GB of on-board memory (expandable via a MicroSD card slot) allow it to store and render documents and media files on its own. It's a self-contained presentation system.

Fully charging the MP220's lithium-polymer battery takes several hours; 3M says that the projector will run for 2 hours on a single charge. When you turn it on (using a button on the right edge), the Android-based interface fires up after a few moments; you then navigate using a tiny touchpad flanked by the standard Android hardware buttons (home, menu, and return) and a search button on the top of the projector.

The company rates the unit's brightness on battery power as 65 lumens, which is pretty much the new (and improved) normal for pico projectors on battery power. Unlike many competitors, however, that tout higher brightness ratings when their projectors are running on a wall outlet, 3M doesn't provide a rating for when the MP220 is connected to its included AC power adapter.

In my tests in a well-lit room, the MP220 cast sharp, bright, 36-inch-diagonal images on a wall from 5 to 6 feet away; 3M says the device can throw images up to 75 inches diagonal, but I wasn't able to test this. Audio from the two 0.75-watt stereo speakers was underwhelming, but that's typical for this class of projector. The unit has an audio output if you'd like to connect more powerful speakers (or headphones).

The MP220 can handle VGA, RCA, and Apple devices as video sources via an AV input on its right edge. Unfortunately, you'll need to pay extra for the cables to take advantage of it. In fact, the only cable that comes with the MP220 is a USB cable that connects to its Mini-USB port, and you use it only to transfer files from a computer, not to display them. In addition, 3M charges extra for a number of accessories that some of its competitors bundle with their products—for example, a remote control and a tripod.

The MP220 supports MPEG-4, H.264, and MOV video; GIF, PNG, BMP, and JPG still-image files; AAC and MP3 audio; and via the included Documents to Go app, DOC, PDF, PPT, TXT, and XLS files. It comes with a couple of other apps, including games, though the small touchpad doesn't invite usage of the MP220 with gaming devices. Given the high-resolution specs, we were somewhat surprised that this projector doesn't support HDMI.

XPS 12 Convertible Touch: Laptop Meets Tablet

LAB TESTED

SINCE USERS CAN control Windows 8 by touch as well as by mouse and keyboard, we're bound to see innovative portable designs. For instance, you can rotate the 12.5-inch touchscreen of Dell's XPS 12 Convertible Touch Ultrabook to face outward, turning it into a tablet.

The display is covered with Gorilla Glass, the frame is aluminum, the base and top are carbon fiber, and the keyboard deck is magnesium. Despite its use of space-age materials, the XPS 12 would be overly thick and heavy for a pure tablet Meanwhile, its 4-pound travel weight makes the unit considerably heavier than a normal 12.5-inch or even 13.3-inch laptop

You also pay for the XPS 12's duality. Our low-end test unit, with a 128GB solid-state drive, a Core i5-3317U CPU, 4GB of memory, and integrated HD 4000 graphics, costs a rather steep $1199. You can up the RAM to 8GB, the CPU to a Core i7-3517U, and the SSD to 256GB, and pay $1699.

The keyboard has more travel than you'd expect; typing feels good. The touchpad is responsive, though I found it prone to registering inadvertent taps. The touchpad is also a one-piece rocking unit that you can press to click.

One bet Dell may have missed was in not further articulating the frame. As it stands, you can rotate the display to 45 degrees, but the upper part of the frame gets in the way. To be fair, an articulated frame may have been too fragile for everyday use.

Decent Speed

Although we can't compare scores from our new WorldBench 8 suite with results from WorldBench 7, we can say that the XPS 12's mark of 64 is competitive. (In contrast, the Sony Tap 20, an all-in-one with laptop-class components, had a score of 40.) Subjectively, the XPS 12 feels fast, but we had to drop the resolution to 1366 by 768 or lower to get decent gameplay. In PCMark 7, the Dell had a productivity score of 2187, about half the score of our baseline desktop system but better than the HP Envy TouchSmart Ultrabook 4's mark of 2058.

In our revised battery test, which alternates video playback with some light office scripts, the XPS 12 lasted for 4 hours, 39 minutes, comparing favorably with the Envy TouchSmart, which survived for 4 hours, 7 minutes.

The display's native resolution is 1920 by 1080, and 1080p movies look spectacular. Unfortunately, the audio from the speakers is tinny.

You'll find two USB 3.0 ports, plus a mini-DisplayPort that can drive VGA and HDMI displays—with $33 and $20 adapters. The unit comes with a headphone jack, a dual-array mic, and a 1.3-megapixel webcam. Connectivity consists of 802.11a/g/n Wi-Fi and Bluetooth 3.0. Wired ethernet requires a $20 USB-to-ethernet adapter.

Bottom Line

Dell's XPS 12 Convertible Touch Ultrabook offers a clever and stylish design, and it obviates the need to carry a tablet with you. It's on the heavy side, but that may be a common theme with touchscreen laptops for the foreseeable future.—*Jon L. Jacobi*

★★★½ ; $1199; Dell; go.pcworld.com/xps12conv

PHOTOGRAPH ROBERT CARDIN

The XPS 12's aluminum frame supports the swiveling display.

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Now with Windows 8

EDITORS' CHOICE: Color Laser MFPs

	MODEL	Rating	Performance	Features and specifications
1	BEST BUY **Brother MFC-9970CDW** $700 go.pcworld.com/brother9970	★★★½ VERY GOOD	• Text quality: Superior • Photo quality: Good • Tested speed: 15.7 ppm text/3.2 ppm photo	• USB, ethernet, wireless connectivity • 300-sheet standard input, auto duplexing • Average toner cost, per editorial research: 1.9 cents black, 12.7 cents four colors
	▸ A 5-inch color touchscreen enhances this small-office and workgroup machine. It's also fast, with Wi-Fi and inexpensive toner.			
2	**Xerox ColorQube 8700/X** $2799 NEW go.pcworld.com/xerox8700x	★★★½ VERY GOOD	• Text quality: Very Good • Photo quality: Very Good • Tested speed: 16.9 ppm text/1.9 ppm photo	• USB, ethernet connectivity • 625-sheet standard input, auto duplexing • Lowest vendor-specified solid-ink cost: 1.8 cents black, 13.9 cents four colors
	▸ This pricey workgroup unit is fast and well equipped. The solid-ink tech produces laserlike results with less fuss and at lower cost.			
3	**Brother MFC-9560CDW** $650 go.pcworld.com/brother9560	★★★½ VERY GOOD	• Text quality: Superior • Photo quality: Good • Tested speed: 15.0 ppm text/3.0 ppm photo	• USB, ethernet, wireless connectivity • 300-sheet standard input, auto duplexing • Average toner cost, per editorial research: 1.9 cents black, 12.7 cents four colors
	▸ Speed, economical toner, and Wi-Fi are the highlights of this small-office and workgroup model. Photo quality is acceptable.			
4	**Samsung CLX-6260FW** $1000 NEW go.pcworld.com/samsung6260fw	★★★½ VERY GOOD	• Text quality: Superior • Photo quality: Superior • Tested speed: 12.4 ppm text/1.8 ppm photo	• USB, ethernet, wireless connectivity • 300-sheet standard input, auto duplexing • Lowest vendor-specified toner cost: 3.0 cents black, 17.1 cents four colors
	▸ Photo quality is the highlight of this small-workgroup unit; speed and features are good. Toner costs can be a little pricey.			
5	**HP LaserJet Pro 400 Color MFP M475dw** $750 go.pcworld.com/hplaserjet475	★★★½ VERY GOOD	• Text quality: Superior • Photo quality: Good • Tested speed: 11.6 ppm text/2.5 ppm photo	• USB, ethernet, wireless connectivity • 300-sheet standard input, auto duplexing • Lowest vendor-specified toner cost: 2.6 cents black, 16.4 cents four colors
	▸ This office-oriented laser MFP boasts great output and good paper handling, but its toner is a little more expensive than average.			
6	**Lexmark X548dte** $1749 go.pcworld.com/lexmark548	★★★½ VERY GOOD	• Text quality: Superior • Photo quality: Good • Tested speed: 14.5 ppm text/2.5 ppm photo	• USB, ethernet connectivity • 900-sheet standard input, auto duplexing • Lowest vendor-specified toner cost: 1.7 cents black, 11.9 cents four colors
	▸ Lexmark's model for large workgroups has speed and paper capacity to spare, but only its extra-high-yield toner is a good deal.			
7	**Oki MC561 Color MFP** $749 go.pcworld.com/oki561	★★★ GOOD	• Text quality: Superior • Photo quality: Fair • Tested speed: 17.6 ppm text/2.6 ppm photo	• USB, ethernet connectivity • 350-sheet standard input, auto duplexing • Lowest vendor-specified toner cost: 2.1 cents black, 14.8 cents four colors
	▸ This Oki model shines with speed, good paper handling, and reasonably priced toner; its graphics quality is mediocre, however.			
8	**Canon ImageClass MF8380Cdw** $599 go.pcworld.com/canon8380	★★★ GOOD	• Text quality: Superior • Photo quality: Good • Tested speed: 11.1 ppm text/3.3 ppm photo	• USB, ethernet, wireless connectivity • 300-sheet standard input, auto duplexing • Lowest vendor-specified toner cost: 3.7 cents black, 16.4 cents four colors
	▸ Photos that print quickly and look good are a strong point. Canon's pricey black toner could strain small-office budgets.			
9	**Brother MFC-9125CN** $400 go.pcworld.com/brother9125	★★★ GOOD	• Text quality: Superior • Photo quality: Fair • Tested speed: 12.2 ppm text/2.7 ppm photo	• USB, ethernet connectivity • 250-sheet standard input • Lowest vendor-specified toner cost: 3.4 cents black, 18.4 cents four colors
	▸ Next to other low-cost models, the MFC-9125CN stands out with good speed and toner costs, but its color quality is middling.			
10	**Xerox WorkCentre 6505/DN** $749 go.pcworld.com/xerox6505	★★★½ GOOD	• Text quality: Superior • Photo quality: Good • Tested speed: 15.1 ppm text/2.0 ppm photo	• USB, ethernet connectivity • 250-sheet standard input, auto duplexing • Lowest vendor-specified toner cost: 3.5 cents black, 16.7 cents four colors
	▸ Although this workgroup model offers good speed and print quality, its talents are overshadowed by expensive toner.			

CHART NOTES: Ratings are as of 11/28/12. Listed toner costs are per page; ppm=pages per minute.

MORE ONLINE Visit go.pcworld.com/laserMFP for in-depth reviews, full test results, and detailed specs for each MFP on this chart.

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Surface RT Is an Effective Productivity Machine

LAB TESTED

MICROSOFT'S hotly anticipated Surface RT tablet is here, and it's a fresh, fun reinterpretation of the basic tablet experience.

The build quality of the 0.37-inch-thick, 1.5-pound unit is sturdy and confident. While the 10.6-inch, 1366-by-768-pixel display suffers from pixel blur, it's still quite nice.

The 1.4GHz quad-core Tegra 3 processor and 2GB of memory handle their work without drama. In tests, the Surface RT more than held its own: With a frame rate of 6.9 frames per second, it topped the WebVizBench HTML5 test. In posting a time of 10.4 seconds in our webpage loading test, the tablet squeaked past the iPad. In battery-life tests, it came in second to the iPad, playing a looping HD video for more than 9 hours.

Between the kickstand, the optional keyboard covers (I prefer the Type Cover over the Touch Cover), and the included light version of Office, the Surface RT becomes a serviceable desktop PC, though the dearth of apps limits its full potential.

In many ways, the Surface RT redefines what a tablet can be. Its productivity features eclipse anything on the iPad or on Android rivals. But a lot of people will be better served by a tablet running the full Windows 8 on x86 silicon, such as the upcoming Surface Pro. (For more, see *Forward*, page 13.) —*Jon Phillips*
★★★½☆; starts at $499 (32GB); Microsoft; go.pcworld.com/surfacert

The Surface RT's kickstand and case are made of magnesium.

VivoTab RT: Thoughtful Design, Mixed Results

LAB TESTED

ASUS'S VIVOTAB RT represents an evolution of the company's Transformer Pad Infinity TF700. The VivoTab's bundled dock adds only 1.3 pounds and has an extra battery and USB port. Regrettably, its keys are a bit shorter than those on the Infinity dock, and that made a big difference in my typing comfort and accuracy.

Weighing 1.19 pounds and measuring 10.35 by 6.73 by 0.33 inches by itself, the tablet feels well balanced; holding it in portrait mode seems especially natural.

The 10.1-inch, 1366-by-768-pixel Super IPS+ display offers pleasing colors.

Carrying a 1.3GHz Nvidia Tegra 3 quad-core CPU (1.4GHz in single-core use) and 2GB of memory, the tablet was zippy and responsive, with a few instances of lag. On the SunSpider benchmark, it was the fastest tablet, taking 1.03 seconds to do the same JavaScript test that the iPad took 1.78 seconds to run.

The unpredictable behavior of Windows 8 RT confounded me sometimes. For example, I couldn't use the included charging cable to connect via USB to a PC and mount the VivoTab as a drive on my laptop, something I do all the time with Android tablets.

The VivoTab RT's hardware is solid. But Windows RT's quirks and restrictions may limit the tablet's audience to people who have bought a Windows 8 laptop or desktop PC, and want to extend their new Windows 8 software purchases across multiple systems. —*Melissa J. Perenson*
★★★½☆; starts at $599 (32GB, with dock); Asus; go.pcworld.com/vivotabrt

The VivoTab RT's keyboard dock is customized for Windows RT.

PHOTOGRAPH: (TOP) ROBERT CARDIN

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Digital Storm Marauder: Good Gaming, Little Else

Digital Storm's Marauder gaming desktop.

LAB TESTED

TRUE TO ITS design, the Marauder is decently geared for gaming. If you are buying it as an affordable gaming system, you'll do fine. But in nearly every other respect, this system suffers from deficiencies that make it less appealing for general use.

Our review unit contained a 3.1GHz AMD FX-8120 Zambezi processor and 8GB of memory. But with a less-than-impressive score of 77 on our WorldBench 7 tests, it took a sound beating from comparably priced, Intel-driven budget desktops such as the Asus Essentio CM6870.

Gaming is the Marauder's specialty, though. With its Radeon HD 7700 graphics board, it pumped out 80.4 frames per second on our Dirt 3 benchmark. The Marauder was also able to run our Crysis 2 test at a maximum playable resolution of 1928 by 1080, hitting a rate of 42.8 fps

But when I say that gaming is this system's only bright spot, I mean it. The single 500GB hard drive is a low-end choice even for a budget desktop. The PC also has an average assortment of connections. We're big fans, however, of its Corsair Vengeance C70 case. You'll find room for upgrades within the Marauder, and its chassis keeps the process smooth and streamlined.

You'd have to be a pretty enthusiastic gamer with barely a budget for the Marauder to appeal to you. Digital Storm has recently upgraded the system to include an AMD FX-8150 processor, so the CPU performance should be marginally better. Otherwise, there's little about it that similar desktops don't thoroughly squash. —*David Murphy*

★★½ ☆ ☆; $999; Digital Storm; go.pcworld.com/marauder

Lenovo M92z: A Multitouch Business System

LAB TESTED

THE LENOVO THINKCENTRE M92z epitomizes efficiency. It's a true desktop system that doesn't rely on laptop-style construction, resulting in better performance.

It comes outfitted with an Intel Core i7-3770S processor that runs at 3.1GHz. It also has 8GB of RAM for optimal multitasking.

On our WorldBench 7 benchmark suite, the M92z earned a score of 91—about 9 percent slower than our baseline system. In comparison, the Vizio CA27-A1 racked up a mark of 122. In part, the big difference in scores was attributable to the Vizio's quick startup time (20.6 seconds), which is far less than that of the M92z (49.4 seconds). On the other hand, the M92z has a 1TB (7200-rpm) hard drive that outperforms the Vizio's on most normal hard-drive benchmarks. Don't expect much gaming performance, though. It comes with Intel's integrated HD Graphics 4000, but you have the option to move to an AMD Radeon HD7650 with 1GB of memory.

Lenovo's multitouch desktop.

The M92z's screen is a 23-inch multitouch display with antiglare capability and a resolution of 1920 by 1080 pixels. The PC is also well stocked with ports and connectivity options, and offers full networking capabilities. Overall, it's a great choice for users in need of a strong, smart business system.—*Alex Cocilova* ★★★½ ☆; $1247; Lenovo; go.pcworld.com/m92

PHOTOGRAPHS ROBERT CARDIN

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[illegible]

Bose.com/headphones

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EDITORS' CHOICE: Ultraportable Laptops

LAB TESTED

	MODEL	Rating	Performance	Features and specifications
1	**Lenovo IdeaPad Yoga** **$1099 NEW** go.pcworld.com/lenovoyoga	★★★★½ SUPERIOR	• WorldBench 8 score: 60 • WorldBench 8 rating: Good • Overall design: Superior • Tested battery life: 5:37	• 1.7GHz Intel Core i5-3317U • 13.3-inch widescreen • 3.4 pounds • 500GB hard drive; caching SSD
	▸ This especially flexible laptop has a great keyboard, touchpad, and touchscreen, and can be used in multiple positions.			
2	**Vizio CT14-A2** **$1499** go.pcworld.com/vizioc14-a2	★★★★½ SUPERIOR	• WorldBench 7 score: 158 • WorldBench 7 rating: Superior • Overall design: Superior • Tested battery life: 5:17	• 1.9GHz Intel Core i7-3517U • 14.0-inch widescreen • 3.4 pounds • 256GB solid-state drive
	▸ Vizio ships a sleek, gorgeous-looking laptop that performs well, with an emphasis on usability over features.			
3	**Acer Aspire S5** **$1399** go.pcworld.com/aceraspires5	★★★★½ SUPERIOR	• WorldBench 7 score: 195 • WorldBench 7 rating: Superior • Overall design: Superior • Tested battery life: 5:28	• 1.9GHz Intel Core i7-3517U • 13.3-inch widescreen • 2.6 pounds • 256GB solid-state drive
	▸ The sleekly designed Acer Aspire S5 Ultrabook poses one of the most credible threats to the MacBook Air we've seen to date.			
4	BEST BUY **Dell XPS 13** **$999** go.pcworld.com/dellxps13	★★★★½ SUPERIOR	• WorldBench 7 score: 136 • WorldBench 7 rating: Very Good • Overall design: Superior • Tested battery life: 6:26	• 1.6GHz Intel Core i5-2467M • 13.3-inch widescreen • 3.0 pounds • 256GB solid-state drive
	▸ If the display had a higher resolution and offered better off-axis viewing angles, this would be our favorite Ultrabook.			
5	**Asus Zenbook Prime UX31A** **$1449** go.pcworld.com/zenbookprimeUX31A	★★★★ VERY GOOD	• WorldBench 7 score: 150 • WorldBench 7 rating: Very Good • Overall design: Superior • Tested battery life: 6:24	• 1.9GHz Intel Core i7-3517U • 13.3-inch IPS widescreen • 3.1 pounds • 256GB solid-state drive
	▸ The Zenbook Prime UX31A offers a superb IPS display and solid performance in an ultralight, slick package.			
6	**Acer Aspire S7-391** **$1640 NEW** go.pcworld.com/aceraspires7	★★★★ VERY GOOD	• WorldBench 8 score: 72 • WorldBench 8 rating: Very Good • Overall design: Superior • Tested battery life: 3:54	• 1.7GHz Intel Core i5-2557M • 13.3-inch widescreen • 3.1 pounds • 128GB solid-state drive
	▸ The S7 is a nice laptop to use and show off, but having an 8GB option and better battery life would be nice.			
7	**Dell Latitude E6220** **$2000** go.pcworld.com/dellE6220	★★★★ VERY GOOD	• WorldBench 6 score: 132 • WorldBench 6 rating: Superior • Overall design: Very Good • Tested battery life: 7:28	• 2.6GHz Intel Core i5-2540M • 12.5-inch widescreen • 3.7 pounds • 128GB solid-sate drive
	▸ Though pricey for a 12.5-inch laptop, this ultraportable delivers in performance and battery life.			
8	**Lenovo IdeaPad U300s** **$1595** go.pcworld.com/lenovoU300S	★★★★ VERY GOOD	• WorldBench 6 score: 114 • WorldBench 6 rating: Very Good • Overall design: Superior • Tested battery life: 6:34	• 2.67GHz Intel Core i7-2677M • 13.3-inch widescreen • 2.9 pounds • 256GB solid-state drive
	▸ The U300s compensates for its high price and slightly slow performance with a classy and very usable design.			
9	**Lenovo ThinkPad X1 Carbon** **$1599** go.pcworld.com/x1carbon	★★★★ VERY GOOD	• WorldBench 7 score: 144 • WorldBench 7 rating: Very Good • Overall design: Very Good • Tested battery life: 6:11	• 2GHz Intel Core i7-3667U • 14.0-inch widescreen • 2.9 pounds • 256GB solid-state drive
	▸ Lenovo's X1 Carbon offers an understated look and exotic chassis material, but the LCD panel display quality could be better.			
10	**Samsung Series 9 (2012 model)** **$1500** go.pcworld.com/samsungseries9	★★★★ VERY GOOD	• WorldBench 7 score: 154 • WorldBench 7 rating: Superior • Overall design: Good • Tested battery life: 7:36	• 1.6GHz Intel Core i5-2467M • 15.0-inch widescreen • 3.7 pounds • 128GB solid-state drive
	▸ This tantalizing machine fills the niche of the 15-inch Ultrabook, but its keyboard and touchpad are disappointing.			

CHART NOTES: Ratings are as of 12/17/12. Battery life is expressed in hours:minutes. Listed weights do not include the power adapter.

MORE ONLINE Visit go.pcworld.com/ultraportables for in-depth reviews, test results, and detailed specs for laptops on this chart.

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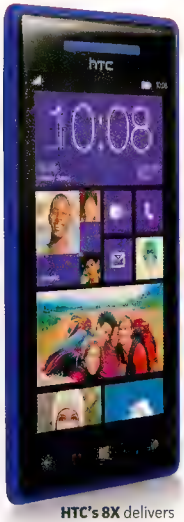

HTC's 8X delivers solid performance.

Win Phone 8X: A Flagship Smartphone

HTC'S WINDOWS PHONE 8X —the company's flagship Windows Phone 8 handset—is easy to love with its bright colors, curved angles, and snappy operating system.

It comes in shades inspired by the vibrant live tiles, and weighs just 4.5 ounces. With a 1.5GHz dual-core Qualcomm S4 processor and 1GB of RAM, the 8X takes advantage of Windows Phone 8's upgraded hardware requirements. It responded instantly to commands, and had no difficulty streaming music or videos, or running apps. But its 16GB storage (with no expansion options) was less impressive.

The 8X's LCD 2 touchscreen display with a 4.3-inch slab of Gorilla Glass 2 and a 720p HD resolution produces stunning images. It features roughly 331 ppi, and watching videos is a treat. Call quality is also stellar.

It sports a major overhaul on the software side too. Microsoft has stressed customization and rolled out many features, starting with the ability to resize live tiles to make the home screen more personal and manageable. You'll find apps for Word, Excel, and PowerPoint. In addition, Microsoft plans to have 46 of the top 50 apps available soon.

So, can the HTC Windows Phone 8X make an impact? I think it stands a chance. Everyone I know who has seen it has marveled about its UI, display, and hardware. Like other Windows Phone 8 handsets, the 8X will suffer if the app ecosystem stalls out, but Microsoft seems ready to address this. The 8X thus seems to be a breath of fresh air for smartphone users.—*Amber Bouman*

★★★★½; $199 (16GB); HTC; go.pcworld.com/htc8x

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LG Escape: Good Features on a Budget

THE ANDROID-POWERED LG Escape sports a 4.3-inch IPS display and a speedy dual-core processor, but is priced at a mere $50 with a two-year contract from AT&T

It weighs in at 4.5 ounces, and is fairly thin. Bolstering the clean and minimalist look is a high-resolution, 960-by-540-pixel (256-ppi) display.

I was very impressed with the data speeds I got on the Escape on AT&T's 4G LTE network in San Francisco. Apps downloaded in a flash, and video streaming and Web browsing were pleasant.

The Escape comes loaded with Android 4.0 and the Optimus UI 3.0. Navigating around the operating system was quite smooth due to the 1.2GHz dual-core Qualcomm Snapdragon S4 processor and 1GB of RAM. Even after a full day of fairly heavy use, the phone still had plenty of juice left. Also, I never ran into any issues with its call quality.

The phone's 4GB of internal storage doesn't leave much room to work with, but it has a MicroSD slot for expanding storage to 32GB.

The Escape's 5-megapixel rear camera wasn't impressive, and the images suffered from a loss of detail. It can capture 1080p HD video, but I thought the footage looked dull and lacked detail.

The phone's biggest upside is its 4.3-inch IPS screen. And although it doesn't offer the greatest hardware, it doesn't disappoint either. So if you're in the market for an Android handset but on a tight budget, the LG Escape is worth a look. —*Michael Homnick*

★★★½ ☆; $50 (with 2-year contract); LG; go.pcworld.com/escape

LG's Escape offers a nice screen and a fast processor.

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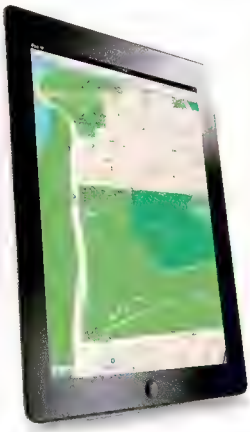
Fourth-Generation iPad Faster, Stronger, Better

PLACE THE FOURTH-generation iPad next to the third-generation iPad, and good luck telling them apart. The only outward difference is that the latest model sports Apple's new Lightning connector.

Otherwise, it has the same dimensions, controls, and 2048-by-1536-pixel Retina display as its predecessor, and nearly as good battery life. To see the new iPad's differences, you have to look under the hood.

Apple advertises the device as having "twice the speed" and "twice the graphics performance" of the third-gen iPad, and our benchmark tests largely bore that out. High-performance games all played very well and looked great. But it will be a while before the arrival of apps that can take advantage of the fourth-generation model's horsepower. In general use, the new iPad is plenty snappy, though for most tasks you probably won't see a huge difference between it and the previous iPad.



Apple's fourth-generation iPad with Retina display

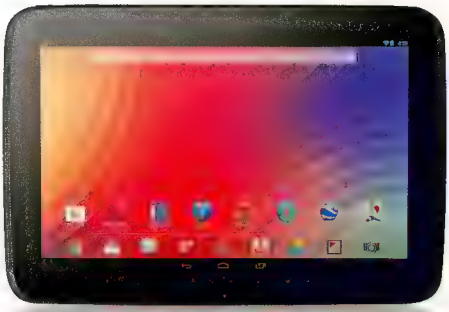
Other improvements include updated rear-facing and front-facing cameras (the latter now offers 720p videoconferencing), plus souped-up wireless capabilities and an upgraded LTE networking chip that supports more frequencies. In addition to a Wi-Fi–only model, the iPad comes in two LTE flavors: one for AT&T's network and one that works with Sprint and Verizon (and also supports CDMA and GSM).

So who is this iPad meant for? If you've never owned an iPad and you want a nice big screen, or you own the iPad 2 or earlier, you'll find this new model compelling. But owners of the third-generation iPad likely won't—at least until there are apps equal to its power. —*Dan Moren*

★★★★½ $499 to $699; Apple; go.pcworld.com/ipad4g

Google Nexus 10: The First Android 4.2 Tablet

THE NEXUS 10, Google's flagship tablet, enters the fray boasting strong specs and competitive pricing—$399 for 16GB of storage (the same price as for Apple's 16GB iPad 2) and $499 for 32GB. It's also the first Android 4.2 tablet. Despite a few weaknesses, it's a worthy competitor to the latest iPad model (see our review, above).



Google's Nexus 10 has a beautiful display and a reasonable price.

The superior display is evident the moment you turn on the tablet, as it offers an impressive 300 pixels per inch and 2560 by 1600 resolution. Text is smooth and sharp, and I found the display a pleasure to use for everything from viewing pictures to reading ebooks and webpages. My one gripe involves the tablet's handling of colors: Skin tones, especially, seemed a bit off.

At 10.39 by 6.99 by 0.35 inches, the Nexus is similar in size to competing models; but at 1.33 pounds, it's heavier.

The Nexus 10 packs a dual-core Samsung processor, a generous 2GB of system memory, and Bluetooth 4.0 and 802.11b/g/n Wi-Fi connectivity. On the back is a 5-megapixel, 1080p camera with an LED flash, on the front, a 1.9-megapixel, 720p camera

In our benchmark tests, the Nexus scored the highest overall of any tablet. It also excelled in our battery life tests, lasting 8 hours, 55 minutes while playing an HD video.

The Google Nexus 10 is the best 10-inch-class Android tablet available. The clarity of its display, its reasonable price, and the fact that it offers the latest Android version make it a worthy challenger to the iPad. —*Melissa J. Perenson*

★★★★☆; $399 (16GB), $499 (32GB); Google; go.pcworld.com/nexus10

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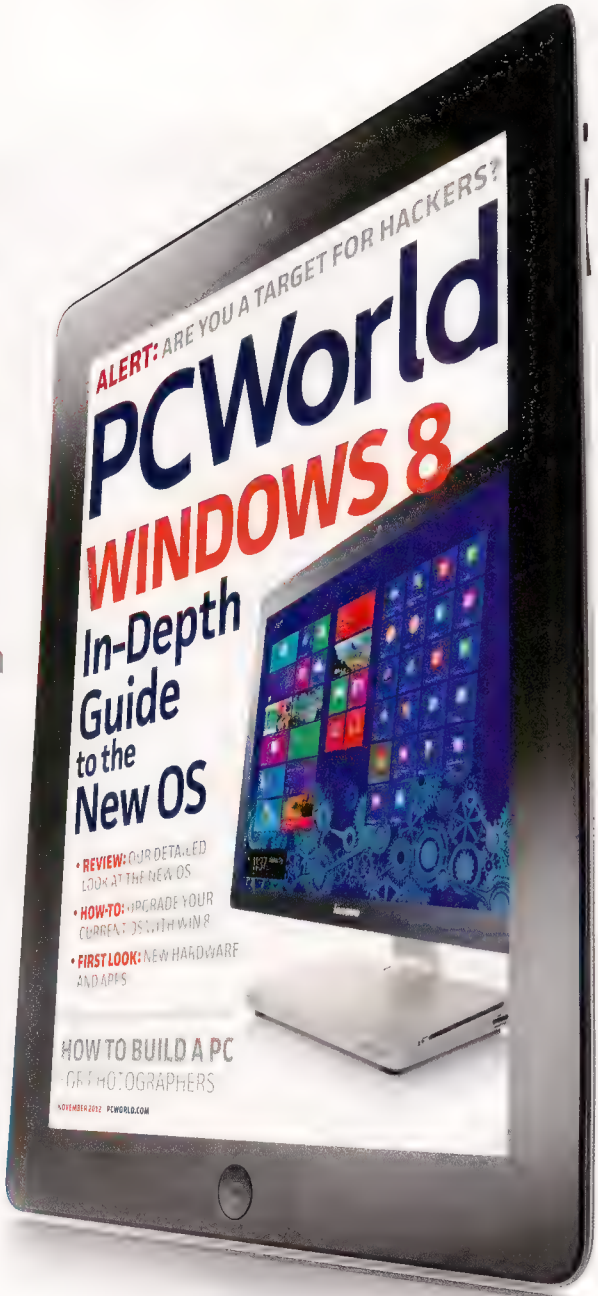

EDITORS' CHOICE: Megazoom Cameras

LAB TESTED

	MODEL	Rating	Performance	Features and specifications
1	BEST BUY **Canon PowerShot SX260 HS** **$279** go.pcworld.com/pssx260hs	★★★★ VERY GOOD	• Image quality: Very Good • Video quality: Very Good • Battery life: 230 shots	• 20X zoom lens (25mm to 500mm) • Manual exposure controls • 1080p video
	▸ The PowerShot SX260 HS has very good image quality, and a great mix of options for novice and experienced shooters alike.			
2	**Sony Cyber-shot DSC-HX9V** **$319** go.pcworld.com/sonyhx9v	★★★★ VERY GOOD	• Image quality: Good • Video quality: Superior • Battery life: 300 shots	• 16X zoom lens (24mm to 384mm) • Innovative scene modes • 1080p video
	▸ The Cyber-shot DSC-HX9V's extras include 3D shooting, great video quality, in-camera GPS, and groundbreaking scene modes.			
3	**Samsung WB850F** **$349** go.pcworld.com/samwb850f	★★★½ VERY GOOD	• Image quality: Very Good • Video quality: Fair • Battery life: 200 shots	• 21X zoom lens (23mm to 483mm) • Manual exposure controls • 1080p video
	▸ The feature-loaded Samsung WB850F is the best Wi-Fi camera we've reviewed, but it has a few usability problems.			
4	**Panasonic Lumix DMC-ZS20** **$259** go.pcworld.com/lumixzs20	★★★½ VERY GOOD	• Image quality: Good • Video quality: Good • Battery life: 260 shots	• 20X zoom lens (24mm to 480mm) • Manual exposure controls • 1080p video
	▸ The Lumix DMC-ZS20 is a top-tier travel camera, thanks to a powerful zoom, built-in GPS, and extensive shooting options.			
5	**Casio Exilim EX-H20G** **$250** go.pcworld.com/exh20g	★★★½ VERY GOOD	• Image quality: Very Good • Video quality: Good • Battery life: 500 shots	• 10X zoom lens (24mm to 240mm) • In-camera mapping • 720p video
	▸ The vacation-friendly EX-H20G is a top performer in daylight, but it lacks manual controls and a few key features.			
6	**Casio Exilim EX-ZR100** **$409** go.pcworld.com/exzr100	★★★½ VERY GOOD	• Image quality: Good • Video quality: Good • Battery life: 450 shots	• 12.5X zoom lens (24mm to 300mm) • Manual exposure controls • 1080p video
	▸ The EX-ZR100's superhigh-speed shooting and phenomenal battery life set it apart from similar pocket megazooms.			
7	**Fujifilm FinePix F770EXR** **$299** go.pcworld.com/fpf770	★★★ GOOD	• Image quality: Good • Video quality: Fair • Battery life: 300 shots	• 20X zoom lens (25mm to 500mm) • Manual exposure controls • 1080p video
	▸ Although the FinePix F770EXR does a lot of things well, it falls short of its competition in overall image quality.			
8	**Nikon Coolpix S9300** **$277** go.pcworld.com/cps9300	★★★ GOOD	• Image quality: Good • Video quality: Good • Battery life: 200 shots	• 18X zoom lens (24mm to 450mm) • Auto-exposure • 1080p video
	▸ The Coolpix S9300 has very simple controls; its image quality, however, can't compare with that of its predecessor.			
9	**Samsung WB150F** **$200** go.pcworld.com/samwf150	★★★ GOOD	• Image quality: Good • Video quality: Good • Battery life: 270 shots	• 18X zoom lens (24mm to 432mm) • Manual controls and Wi-Fi • 720p video
	▸ The Samsung WB150F has a nice mix of creative modes for casual shooters, but its manual controls require a lot of menu-diving.			
10	**Canon PowerShot Elph 520 HS** **$220** go.pcworld.com/ps520hs	★★½ FAIR	• Image quality: Good • Video quality: Good • Battery life: 190 shots	• 12X zoom lens (28mm to 336mm) • Auto-exposure • 1080p video
	▸ A very compact camera aimed at casual shooters, the PowerShot Elph 520 HS is not up to Canon's usual quality level.			

CHART NOTES: Ratings are as of 12/12/12.

MORE ONLINE Visit go.pcworld.com/zooms for in-depth reviews, full test results, and detailed specs for each camera on this chart.

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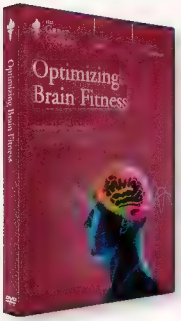

In **Optimizing Brain Fitness**, award-winning Professor of Neurology Richard Restak teaches you how to improve your memory, sharpen your attention, enhance your learning and creativity, and even fine tune your sensory acuity —all by using one of the most revolutionary discoveries in modern neuroscience.

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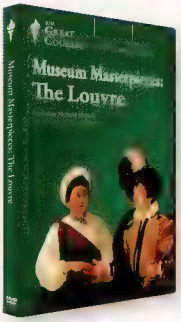

In **Museum Masterpieces: The Louvre**, expert art critic and historian Professor Richard Brettell takes you on an unforgettable journey through one of the world's greatest museums. This 12-lecture series explores some of the most beautiful and renowned examples from the museum's remarkable collection of masterworks.

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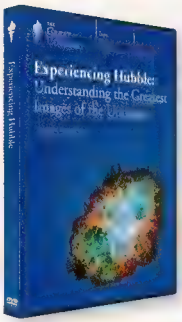

In **Experiencing Hubble: Understanding the Greatest Images of the Universe**, Professor and Director of the Dearborn Observatory David M. Meyer unlocks the secrets of the universe. In this 12 lecture series he discusses the most spectacular images ever produced by the Hubble Space telescope.

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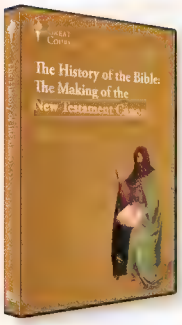

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WinZip 17 Adds Cloud Storage, Social Sharing

DOWNLOAD VERSION 17 of WinZip, available in Pro ($50) and Standard ($30) editions, remains very much in tune with how people share files in today's world.

As in the previous version, the user interface divides Ribbon tabs according to functionality, with clear labels such as Unzip, Edit, Share, Tools, and Settings.

WinZip 17 is well integrated with multiple cloud services.

Dropbox, Google Drive, and SkyDrive are deeply integrated into WinZip 17, and their familiar icons show up in several Ribbon tabs for different operations. The Unzip tab lets you extract files directly into any service without locally browsing for its folder (or even having its client installed). The Edit and Create tabs let you download files from any of the three services and add them to the current archive, and show how much free space you have in each service. The Share tab lets you create a zipped file on a cloud service and quickly email links to files you have on various cloud services.

WinZip can now seamlessly convert documents into PDFs so recipients can't change their contents as easily; it can also shrink image dimensions, so you can reduce a folder of huge camera photos to 800 by 600 images for sharing. The new ZipShare feature lets you send social-media status updates from within WinZip, linking to a zipped file hosted on the ZipShare server.

WinZip Pro has an automated backup feature, but the Standard version has no notion of backup sets and jobs. *—Erez Zukerman*

★★★★½; $30 (Standard), $50 (Pro), WinZip; go pcworld com/winzip17

Chocolatey Installs and Updates Software Easily

DOWNLOAD

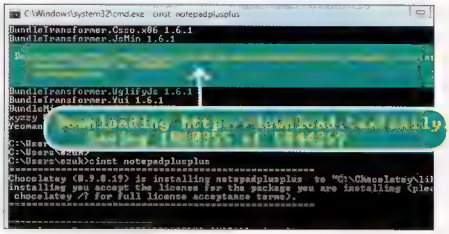
CHOCOLATEY IS A free command-line application that tries to make it easier for developers (especially) to obtain, install, and update software.

Inspired by Linux's apt-get, Chocolatey provides a simple, uniform command-line interface for installing many packages.

Chocolatey's Web-based package repository features over 400 packages, ranging from the obscure (Fantom, a programming language) to the mainstream (Skype, VLC, and more). Chocolatey also uses NuGet, an open-source package manager from Microsoft that has its own repository, called NuGet Gallery, and hosts 8300 unique packages aimed at developers.

To see what packages are available without leaving the console, you can type **chocolatey list** for a long list of packages available from the official Chocolatey feed. To find out whether Dropbox is available, for example, type **chocolatey list dropbox** for the answer (it is).

For applications such as Notepad++, Chocolatey packages go online and download an installer, so package developers don't have to deal with software distribution license issues. To update your software, you just type **chocolatey update notepadplusplus** (or any other package name), and Chocolatey will go back online and get a new installer if one is available. —*Erez Zukerman* ★★★★½, free; Chocolatey; go.pcworld.com/chocolatey



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Tech 2013

Illustration by Bryan Christie Design

All-in-Ones and Desktop PCs

Predictions about what will happen at the end of the PC era have been floating around for years now, and they become more dramatic and more inaccurate with each claim. Why would desktops die off now, when they are becoming so cool?

Sure, drastic changes are afoot, and perhaps the desktops of the near future won't look at all similar to the desktops of the present; but change and evolution are facts of life in the tech industry, and adjusting to the new is a necessity.

All-in-one desktops were once seen as a luxury that couldn't possibly support the needs of the average computer user. They lined the walls in sci-fi movies and boasted futuristic-looking programs that had no discernible purpose. Today, they have become centerpieces for PC companies to showcase the glamorous side of desktop computing. Vizio, for example, strayed away from focusing on televisions and media players to create the new CA24-A2, a beautiful touch-enabled media marvel. Even so, many all-in-ones continued to ship with some corny apps and software installed—there are, after all, only so many ways you can pretend to paint; playing Tap-a-Mole gets old, and so does challenging someone to a spirited game of knock-off Pong.

Cheaper and stronger with every new generation of processor, all-in-ones are becoming viable power PCs. In past years, you'd have been hard-pressed to find anything of decent quality even at $1500. Today you can find tons of options below $1000, allowing people everywhere to enjoy these models' benefits without breaking the bank. In the future, nearly all PCs will be equipped with a discrete graphics card to power basic games at an adequate frame rate, and they will boast such built-in media capabilities as Blu-ray and video-on-demand apps.

In addition, more families will adopt PCs as their center for entertainment, with touch controls that every user can access easily, regardless of PC experience level. PCs will migrate away from the dark, lonely corners of home offices and storm into living rooms, kitchens, and other main gathering areas to provide endless family enjoyment in the form of streamed movies, television, creative applications, and games.

The conventional desktop systems of today—the tower units that are either parked under a desk or displayed prominently like a show car—will remain popular with certain niche groups (such as gamers and business owners, at opposite ends of the PC user spectrum). They will remain the cheapest option for basic computing and office-oriented productivity when glamor and graphical power aren't necessary. Physically, however, they will begin to shrink; indeed, just this past year, we've seen business computers dwindle to the size of a shoebox, and some models, such as the Lenovo ThinkCentre M92P, can even be mounted under a desk in a space-saving hiding spot.

Enthusiasts' computers, on the other hand, will continue to grow to the size of a minifridge to accommodate extra video cards and water-cooling equipment. Some of them will glow and shine with custom paint jobs and interior lighting, modified to become impressive works of art. The Digital Storm Aventum is one such product that takes pride in its size and crushing weight—it almost doubles as a table for a family room. They will be proudly displayed next to a desk bearing multiple monitors and enough gear to make it look like a space cruiser's command deck. My biggest hope is that games of the future will be able to catch up to the power that some computer enthusiasts will be wielding.

The future of desktops is bright and ongoing, no matter what radical claims to the contrary are made. Though most people may resort more frequently to their phones and tablets to get work done quickly on the go, true computing power will continue to come from that thing plugged into a wall. —*Alex Cocilova*

Vizio CA24-A2: Touch-enabled for Windows 8.

Sony Duo 11: A laptop-tablet hybrid.

Laptops

The line between laptops and tablets is rapidly blurring. Five years from now, the line may have vanished entirely.

Today's tablets and laptops are very different gadgets. The ideal consumption devices, tablets are frequently used for passively browsing the Web, watching video, and reading on the go. Laptops are better suited for productivity. In the long run, these two different devices will become aspects of the same hardware. Tomorrow's laptop and tablet will be one and the same—and that's why this section is as much about tablets as laptops.

The first phase of that transition is already under way—Windows 8 hybrid systems show a little of what's possible. Lenovo's Yoga 13, Dell's XPS Convertible Touch, and the Sony Duo 11 are already combining elements of tablets and laptops. But these systems remain more laptops than tablets overall. The Sony Duo 11, with its 11-inch screen, is the lightest of the bunch, yet it still weighs nearly 3 pounds. Today's pure tablets have smaller screens and limited storage, and lack the performance of full-fledged laptops.

The future will be tablet-centric. Larger tablets, with screens up to 13 inches, will become lighter and thinner, and will be adaptable for productivity by means of a separate, wireless keyboard. Touch interfaces will improve, though external-pointing devices such as pens and mice will still be needed for precision work.

What technologies are emerging to create this tablet-centric future?

An improvement in persistent memory technology (better flash memory) is one key component. Even as cloud storage becomes more important, having large-capacity local storage is critical, particularly if you're on the go in areas that don't offer reliable wireless broadband. You'll need to have those big presentations on local storage; and for video and photo editing, ample storage is key. Improvements in cloud storage, along with a decreasing cost per gigabyte, will be important, however, in keeping files and settings in sync between multiple devices.

CPU improvements, of the type we'll see with Intel's Haswell CPU, will permit tablets designed to dock and become full-fledged PCs easily. CPUs will use less power, for longer battery life, without giving up the performance we see in today's mainstream Ultrabooks. One key improvement that Haswell and other future processors will bring to the table is better graphics performance, even as power consumption decreases. Today's tablets and Ultrabooks offer limited performance in 3D games, for example. Better 3D performance may mean a wider range of gaming options for tablets.

Connectivity must improve as well. Today's mobile broadband speeds are improving, but bandwidth continues to be expensive per gigabyte. Consumers will crave access to higher-capacity wireless broadband, and if the carriers can't deliver that capacity at a more reasonable cost, alternative solutions will likely emerge. Metered connections aren't going to disappear, but prices need to »

drop well below the levels we see today.

Also coming soon are better tablet docks, tuned to the needs of business users. Such tablet docks will include a full-size keyboard, support for multiple monitors, and additional storage.

The traditional clamshell laptop won't completely disappear, however. Some users will still need access to larger screens, robust keyboards, and higher levels of performance. Engineers, professional graphics designers, and others may need 15- to 17-inch systems while on the go. But they will constitute a niche market focused on business users. Mainstream consumers are driving tablet adoption today, and those users will flock to the converged devices of the future.

Nexus 7: Google challenges the iPad.

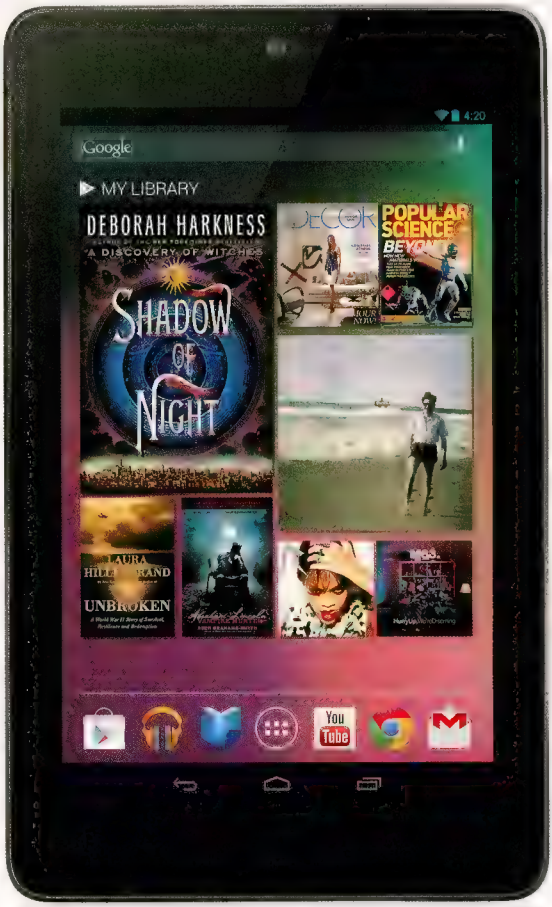
In the long run, the two extremes will coexist. Users will have a powerful desktop system that connects and is synchronized via the cloud to mobile devices that every user will own. People won't need bulky laptops, but instead will carry lightweight tablets whose performance will exceed today's Ultrabooks. As a result, consumers will have the best of both worlds: a powerful PC at home, and a tablet with docking options that will offer enough performance and capability for their on-the-go needs. *—Loyd Case*

Tablets

Tablets have evolved at a lightning-fast pace. And for 2013, we expect another year of rapid and significant change in areas ranging from performance and displays to battery life and price.

Just two years ago, the tablet market that is so large today was in its infancy, dominated by Apple's first-generation iPad. Android tablets were barely getting off the ground, and were saddled with an inappropriate cell-phone operating system slapped into a tablet's larger case.

Today, we have competition and diversity. Apple's iOS-based fourth-gen iPad and iPad mini still dominate, but Android-based tablets are finally making inroads. Leading the way is Google's own Nexus lineup, consisting of the affordable 7-inch Nexus 7 (which starts at $199 and goes up to $299 with HSPA+ mobile broadband connectivity), and the 10.1-inch Nexus 10 (with its crazy-high resolution). Amazon's Kindle Fire HD, a competing $199 tablet built around Amazon's media and services and running Android apps sold through Amazon's own store, has done well, too. And now Windows 8–based tablets are here, led by Microsoft's own Surface With Windows RT tablet.



So what lies ahead? Big growth, for one thing: Research firm IDC expects worldwide tablet shipments to hit 165.9 million units in 2013, up from 117.1 million in 2012. And by 2016, IDC says, worldwide shipments should reach 261.4 million units. This growth will come at the expense of traditional laptops and desktops, and it will foster a growing acceptance of tablets as tools in everyday life, whether as a "second screen" to accompany your TV viewing, as an e-reader, or as a productivity tool.

One of 2013's big stories is likely to be an impending processor battle. That may sound strange—after all, you rarely buy a tablet for its processor alone. And you get what you get—not a lot of customization or variation can be had for any particular model. But that circumstance doesn't lessen the vigorous competition over tablet performance, and the processor inside can make all the difference in how snappy your tablet feels, or how well your favorite games play.

That's where Nvidia's expected refresh of its Tegra 3 system-on-chip platform comes in. This quad-core (plus a fifth, low-power core) processor has been a favorite choice in leading Android tablets for the past year, and it's ready for a refresh.

A leaked roadmap that surfaced in 2012 indicated that the next platform, code-named Project Wayne, will incorporate four ARM Cortex-A15 processors, up from the Cortex-A9 in use in Tegra 3. Its use of A15 will put Tegra on a par with the Qualcomm S4 Pro and Samsung's Exynos 5. With the new processor, we anticipate better system and graphics performance, along with better power management, which should translate into improved battery life, and LTE support. You can expect to see additional tablets based on Qualcomm's S4 Pro as well as on ARM's Cortex-A15 in the next year.

You won't see more tablets running Texas Instruments' OMAP platform (currently on the Amazon Kindle Fire HD and Barnes & Noble Nook HD). TI pulled out of the highly competitive mobile market to focus instead on embedded systems.

Another processor battleground in 2012 pitted the aforementioned ARM-based platforms, with their efficient battery life, against x86-based platforms like Intel's Clover Trail Atom and AMD's Hondo. These processors may possess more performance oomph than the ARM processors, but battery life can lag. Their big benefit for Windows 8 tablets is that they can support full Windows 8 and all legacy applications that run in desktop mode. Few Clover Trail tablets shipped in 2012, but look for a deluge in 2013.

Microsoft Windows 8–based tablets will be 2013's biggest tablet wild card. With Apple's iOS tablets firmly entrenched, and Google's Android challengers looking more polished and appealing than ever, can Microsoft tablets hold the same allure and appeal? That remains to be seen. However, the confusion between Windows RT and full Windows 8 tablets may worsen once Microsoft unleashes its highly anticipated Surface With Windows Pro tablet, expected in January 2013.

We expect more high-pixel-density tablets to hit the market in 2013, continuing a trend begun by Apple's iPad With Retina Display and furthered by Barnes & Noble's Nook HD. Look for 1280-by-800-pixel resolution to become the norm on 7-inch tablets, and 1920-by-1200-pixel resolution to pick up steam on 10.1-inch tablets. Optical bonding, which eliminates the display's air gap, should become more common, too.

Competing with Apple's breadth, other tablet software ecosystems continue to struggle. Google has made progress, albeit slowly, while Microsoft remains far behind in app count. We expect both Google and Microsoft to expand their respective ecosystems; the trick is whether their quality and quantity can compete with Apple's strong base.

Look for more connected tablets, too. In late 2012 some of them finally hit »

3D PRINTING

WHAT CAN YOU do with 3D printing? What can't you do with it? Although the technology is still quite young, it's loaded with potential.

Right now, most consumer-grade 3D printers use ABS plastic as their primary building material; ABS is the material that makes up Lego bricks, but it's relatively brittle, which limits what you can do with it. You can expect to see more-versatile 3D printers come to market in the not-too-distant future. And 3D printers will become considerably more precise: The new Replicator 2 from MakerBot, for instance, can lay down layers of plastic that are 100 microns thick—about as thick as a sheet of paper. The thinner the layers, the better the result.

Consumer-grade 3D printing remains in its infancy, but the technology could one day revolutionize manufacturing. Imagine: Instead of running out and buying your kid a new action figure for her birthday, you could purchase and download a file that tells your 3D printer how to print one out for you. Now that's instant gratification. *—Nick Mediati*

the market. One was Google's affordable, unlocked Nexus 7 WiFi + Mobile Data, which works with 200-plus carriers worldwide. By the end of 2013, we'll look back on the connected Nexus 7 and realize that it was the start of a new trend.

Meanwhile, we expect to see prices continue to plummet over the course of the year. As demand skyrockets, so does production—and in response, prices fall Given today's cutthroat competition, it wouldn't shock us to see a top-tier 10.1-inch Android tablet selling for $300 by the end of 2013. —*Melissa J. Perenson*

Cameras

We expect several trends to emerge in connection with this year's new cameras:

Big sensors in small cameras: Several excellent premium compact cameras have been released in the past few years, but 2012 was an especially innovative year for the category. That's because the image sensors in these pocket-size cameras are getting much bigger and much better, and we're reaching the point where a pocketable camera will offer the image quality of a DSLR.

The marquee models for this trend are Sony's Cyber-shot RX100 ($650), a compact camera with a sensor nearly three times larger than the ones found in cameras of similar size, and the very high-priced Sony Cyber RX1 ($2800), which offers a full-frame sensor that's bigger than those in most consumer DSLRs. Big sensors translate to outstanding images, especially in low-light settings. As other camera companies unveil their own big-sensor pocket cameras, we're betting that this trend is just getting started.

And that just covers the point-and-shoots. In DSLR-land, full-frame sensors are showing up in more moderately priced camera bodies. Before the latter half of 2012, a full-frame DSLR fetched at least $3000, but two more-recent DSLRs—Nikon's D600 and Canon's EOS 6D—sell for around $2000 each. That's not cheap, but it's cheap for full-frame. Expect that more-for-less theme to continue.

Samsung Galaxy Camera: It's connected.

Strong sales for DSLRs and mirrorless cameras: Fewer people have been buying basic point-and-shoot cameras over the past few years, thanks to the convenience and improved capabilities of camera-equipped smartphones. Smartphones are sufficient for handling everyday photography, but they've also introduced many casual shooters to the fun of photography—from which they develop an interest in higher-quality cameras that capture noticeably better photos.

According to 2012 estimates by the Consumer Electronics Association, DSLR sales are expected to increase by 13 percent this holiday season over 2011, while point-and-shoot sales will continue to trend downward by nearly 8 percent. And first-time DSLR owners will have a number of easy-to-use, well-priced options to choose from. You can find several good DSLRs for $500 to $1000 as a kit; and as noted earlier, some full-frame DSLRs are now available for about $2000

Compact interchangeable-lens (or "mirrorless") cameras have also matured nicely. Compared with just last year, the mirrorless category offers many more lens options to choose from, smaller bodies, and cameras built for both beginners and seasoned shooters.

App cameras and connected features: Wi-Fi–enabled cameras aren't new—they've been around since the Kodak EasyShare One debuted in 2005. However, we've never seen as many connected cameras as we have in the past year, and certainly not as many high-end models with wireless-sharing features.

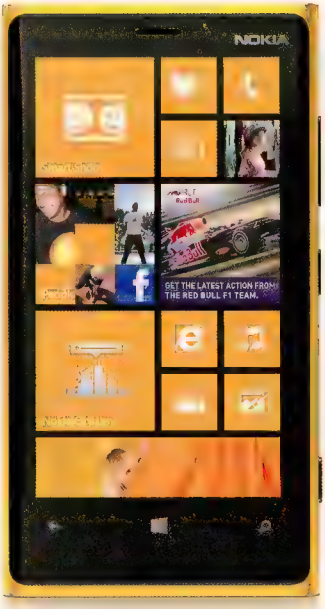
Wi-Fi sharing is now an option in DSLRs and compact interchangeable-lens cam-

eras, not just in basic point-and-shoots. Canon's full-frame EOS 6D DSLR, Sony's new NEX-6 and NEX-5R interchangeable-lens cameras, and Panasonic's Lumix GH3 mirrorless camera all offer Wi-Fi sharing features to complement their high-end imaging and video capabilities. Sony's latest NEX cameras also run proprietary, add-as-you-go apps that let you extend the camera's functionality over time.

On the point-and-shoot side, the 21X-optical-zoom Samsung Galaxy Camera is the most ambitious of the new breed, as it offers 4G and 3G connectivity, runs Android 4.1 and all its compatible apps, and boasts a huge 4.8-inch touchscreen. Nikon's new Coolpix S800C compact camera also runs Android. Wireless sharing, apps, and smartphone-like features are bound to find their way into many more cameras in the next year.

4K/Ultra HD camcorders and DSLRs: Quite a bit of hype has surrounded 4K (or Ultra HD) TV recently, and you'll see a few early-generation 4K HDTVs released in the upcoming year. But Ultra HD is at least a few years away from being mainstream-ready, in large part because not a lot of 4K content is yet available for viewing. And no wonder: At 3840 by 2160 lines, 4K footage has four times the resolution of 1080p video.

Right now, the cameras and camcorders capable of capturing 4K footage are professional-level models, most of which cost several thousand dollars. The exception is the rugged $400 GoPro Hero3 camera, which can capture 4K video, but only at a sluggish rate of 15 frames per second. In the coming year, watch for more video-capable DSLRs and high-end consumer camcorders that can capture 4K video. These models will be strictly for the early-adopter crowd—very expensive and storage-hungry—and unless you've already bought a 4K TV or projector, will you notice the difference when viewing favorite videos? *—Tim Moynihan*



Nokia Lumia 920: It has Windows Phone 8.

Smartphones

Spoiler alert: Your current, top-of-the-line smartphone will be quite outdated by this time next year. That's not entirely a bad thing: Advances in mobile technologies come at an astonishing pace, and smartphones will continue to get smarter and better as time goes on. So while you may think your current phone has a lot of nifty features, your next smartphone will be capable of even more.

But what kinds of improvements can we expect from smartphones in 2013? By looking at today's smartphones, we can get a sense of the kinds of features smartphone makers will focus on in the coming months. Here are some of them.

Wireless charging: This isn't anything new: For years now, you've been able to charge your smartphone wirelessly, thanks to battery cases and charging pads from companies such as Duracell and Energizer. Only recently, however, have we started to see smartphones with inductive charging coils built into the handset itself, obviating the need for special cases or battery packs in order to charge the phone wirelessly. You can recharge models such as the HTC Droid DNA and the Nokia Lumia 920 with any wireless charger that supports the Qi standard, and more Qi-compatible handsets are expected in coming months.

Quad-core becomes the norm: Phones with quad-core processors may be newcomers, but we expect that they will quickly become standard in 2013. These processors let you run more-advanced apps on your smartphone, and they are especially good for playing games with high-definition graphics. If you still use a phone that has a single-core processor, it may be time to consider upgrading to something with a little more oomph under the hood.

Bigger screens: The era of smartphones equipped with small screens is quickly coming to an end. Most of the phones released in 2012 had screens measuring 4.3 inches or greater, and that trend seems likely to continue in 2013. While having a large screen makes a phone difficult to use one-handed, the extra screen space does have some significant benefits: You can view more of your content without constantly having to zoom in and out, and typing on the onscreen keyboard is much more enjoyable, thanks to the buttons' being larger and easier to tap accurately.

NFC becomes big (again): Yes, it's this old song and dance: Last year we predicted that near-field communication (NFC) would take off in 2012, and here we are a year later saying that it will »

LG 84LM9600: An Ultra HD TV set

surely happen in 2013. Most phones today ship with an NFC chip, though many manufacturers, retailers, and customers don't seem to know what to do with the technology. Both Google and Microsoft let you use NFC to make purchases with your phone, but most people are reluctant to give up their physical wallet for a digital one. Samsung's recent ad campaigns showing people sharing media via NFC may help in demonstrating ways that the technology can be useful for things besides mobile payments, but broad acceptance of near-field communication won't happen until the public is ready.

—Armando Rodriguez

TVs and Digital Entertainment

In 2013, televisions are going to get bigger. Not in size, but in resolution, with the first displays to support Ultra High Definition resolutions hitting the market. The new Ultra HD standard offers two resolutions: 7680 by 4320 pixels (16 times as many pixels as on a standard HDTV), and 3840 by 2160 pixels (also known as 4K). Both can support frame rates of up to 120 frames per second for smoother video, and the higher resolution makes images sharper and more realistic. Several manufacturers have announced Ultra HD models: LG offers the 84-inch LG 84LM9600, and Sony has its Bravia KD-X9000. Because Ultra HD is so new, both are pricey—just under $20,000 for the LG, and $25,000 for the Sony.

Ultra HD: These displays may share the problem that 3D TVs did at launch: lack of content. Although the Ultra HD standard has been finalized, no straightforward way to get Ultra HD content exists, as no Blu-ray or broadcast standard supports it. So buying an Ultra HD right now would appeal only to the most ardent early adopter, until a clear-cut way to deliver the content to your TV appears. In the meantime, Sony is lending early purchasers of its Bravia KD-X9000 model a server that is preloaded with Ultra HD content, including ten movies (ranging from the recent Spider-Man reboot to the classic *The Bridge on the River Kwai*) and other Ultra HD content, with the promise of more such offerings to come.

Smarter screens: Your TV may already be smart, but it will soon get smarter. Existing TVs can run various apps that let you do such things as watch Netflix movies and tweet—but that's just the beginning. The range of apps available will continue to widen, with existing companies jumping into the TV app market. For instance, Electronic Arts recently announced versions of the popular board games Monopoly and the Game of Life for Samsung Smart TVs, and other gaming companies are looking at this area.

The number of ways that your TV can receive this extra content will increase, too; the forthcoming ATSC 2.0 standard will allow broadcasters to send files to your TV on the same signal as the show itself, so they could offer things like alternate endings or behind-the-scenes videos similar to the ones found as extras on DVDs. This standard (to be finalized early in 2013) also offers the possibility

for a TV to send data such as live sports stats to a second device—a phone or tablet, say—alongside the live video on the TV, for example, or a link to a website running a TV commercial.

However, the ATSC 2.0 standard won't include support for broadcasting Ultra HD video; that will have to wait for ATSC 3.0, which won't be ready until at least 2015. You'll also have to add extra components to your media center when this standard rolls out, as current displays will require another decoder box.

Talking to your TV: Soon, yelling at your TV might actually be productive, since several manufacturers are adding voice control and other technologies to make your TV easier to use. Last year, Samsung launched sets with a feature called Smart Interaction, which blends voice, facial, and gesture recognition. This feature is being rolled out across a wider range of models in 2013.

The latest version of Google TV also includes voice control, so you can change channels or search by saying the name of the station or show. LG is the first maker to announce a TV that uses it: the G2 series will cost $1700 and $2300 for, respectively, a 32- and a 47-inch model.

Apple has been experimenting with voice recognition for some time through Siri on the iPhone, and we hear persistent rumors that this might be one of the key features that its long-expected TV will offer, or that future models of the Apple TV receivers could include.

—Richard Baguley

Displays

Thinner. Higher-definition. Less power-hungry. You can expect these traits to define monitors for desktop and laptop computers for the next two years.

Buyers want, and even expect, longer battery life and sleeker design with every generation of displays. So manufacturers have every reason to keep turning out devices that satisfy that market, recognizing that buyers deem the display to be a crucial part of the user experience.

Touchscreens: Windows 8 integrates touch support as no previous version of Windows has done. In the new Windows Start screen and in Windows Store applications, you'll be able to use a multitude of touch gestures, many of them involving full, ten-point multitouch interaction; that is, the display will recognize the unique input from all ten fingers. And numerous multitouch displays that fully support Windows 8 are on the horizon.

Some new Windows 8 devices come with pressure-sensitive styluses that let you draw or paint digitally with predictable precision; we'll continue to see more such products in the coming year.

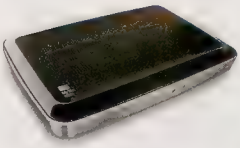
And what about Apple? iOS devices have led the way for Apple in offering high-definition displays, so it stands to reason that its touchscreen technology may also be on the way to the Mac, despite the company's long-standing reluctance to adopt it. After all, competitors like HP have been putting touchscreens on desktop and laptop PCs for years.

While Apple has so far been careful to maintain the boundary between its iOS and Mac operating systems, it would be harder to maintain that separation if everything had a touchscreen. The latest versions of the Mac OS have used trackpads as a touch-by-proxy system, and the market seems to like that compromise.

Better resolution, but slowly: The first rule of monitor shopping is, Don't skimp on image quality! You can work around awkward pedestals and poorly located cable connectors. But you'll be staring at your screen day in and day out, so it's not the place to economize.

Luckily, current-generation touch displays, though expensive, appear to use high-quality components. Most boast IPS (in-plane switching) technology, which offers a wide range of satisfactory viewing angles plus good color fidelity. Samsung is coming out with new PLS (plane-to-line switching) displays, which the company claims beat their IPS rivals in viewing angle, brightness, image quality, and cost of production. Analysts expect to see Samsung's series of low-end PLS-based monitors at some point in 2013. »

ROUTERS



THE IEEE SHOULD ratify the 802.11ac standard this year, which will make people more comfortable buying routers based on that standard (rather than on a draft of the standard). The performance of 802.11ac routers from Asus, Linksys, Netgear, and other manufacturers knocked our socks off in 2012, delivering high throughput and surprisingly good range using the uncrowded 5GHz frequency spectrum. We also expect to see more 802.11ac media bridges shipping this year; buying two expensive routers so you can configure one as a bridge is an unnecessary pain in the neck.

Two other trends should become stronger this year: First, more companies will manufacture routers that include integrated hard drives, similar to Western Digital's My Net 900 Central and Netgear's Centria line of routers. Second, routers will become even more connected to the cloud, which will make it easier for you to reach your home network when you are on the road. *—Mike Brown*

Right now, you won't find multitouch desktop displays capable of resolutions higher than 1920 by 1080 (also known as "full HD"). Even 27-inch touch displays are limited to 1080p; and no 2560-by-1440-resolution displays with capacitive touch are yet available for discrete, stand-alone monitors. Fortunately, however, the display quality at 1080p is great on many touch displays.

The possibility of integrating multitouch in high-res monitors is not far-fetched. Case in point: Dell already sells a 27-inch all-in-one—the XPS One—that features native 2560 by 1440 resolution. Whether future touch displays take this direction will depend largely on consumer demand and on how much consumers are willing to pay. Prices of 27-inch, 2560-by-1440-pixel panels are starting to drop, so it's likely that we'll see some high-resolution models with multitouch support in 2013.

In mid-2012, Apple began bringing its high-definition Retina screen to the MacBook Pro in stages. Those high-def screens are expensive, but so far consumers seem to be prepared to pay for them. Even so, the rollout could happen slowly on the desktop, largely because using standard-definition technology for displays of 19 inches or greater remains more cost effective. That means that the iMac could be the last to go Retina.

But larger displays might not even be the best use of Retina technology. You could argue that it's overkill for a 24- or 27-inch monitor; it would be gorgeous, but it would also be awfully expensive.

More screen space and better ergonomics: Smaller bezels and shrinking profiles are likely to become the norm for both freestanding computer displays and all-in-ones. The newest line of iMacs are 45 percent thinner and 8 pounds lighter than previous generations of the computer, and offer a glimpse of what is to come across the board. One added benefit: The slimmer the display panel, the lower the power consumption.

Product designers are doing interesting things with stands and ergonomics, too. The Acer T232HL LCD monitor uses a single, curved bar attached via a ratcheted spring mechanism to enable the display to tilt at various angles, depending on how you want to use the hardware. Dell's S2340T (a multitouch display, like the Acer) offers an impressively flexible stand that you can tilt easily at various angles—or even make completely flat. Plus, its USB 3.0 ports are located on the base and are easy to reach.

Because of the latest in touch integration, we can expect to see more such innovative ideas on the ergonomic front.

—Loyd Case and Joel Mathis

Dell S2340T: Display has flexible, tilting stand.

STORAGE

WE EXPECT TO see many more hybrid hard drives arriving in 2013. Seagate and Samsung were first to market with these devices, which combine a large cache of flash memory with a moderate-size mechanical drive. The hybrids deliver some of the speed of a solid-state drive as well as the voluminous capacity of a conventional hard drive. Both Western Digital and Toshiba plan to enter this market. WD has not disclosed its plans in detail, but Toshiba has announced that it will offer a 1TB hybrid drive outfitted with 8GB of flash—enough memory to load an operating system and frequently used files.

Hard drive prices will likely remain high through the year—the industry is still recovering from the mass flooding in Thailand that damaged much of its production capacity. At the same time, the prices for true SSDs will continue to fall, as production of 20nm NAND flash ramps up. *—Mike Brown*

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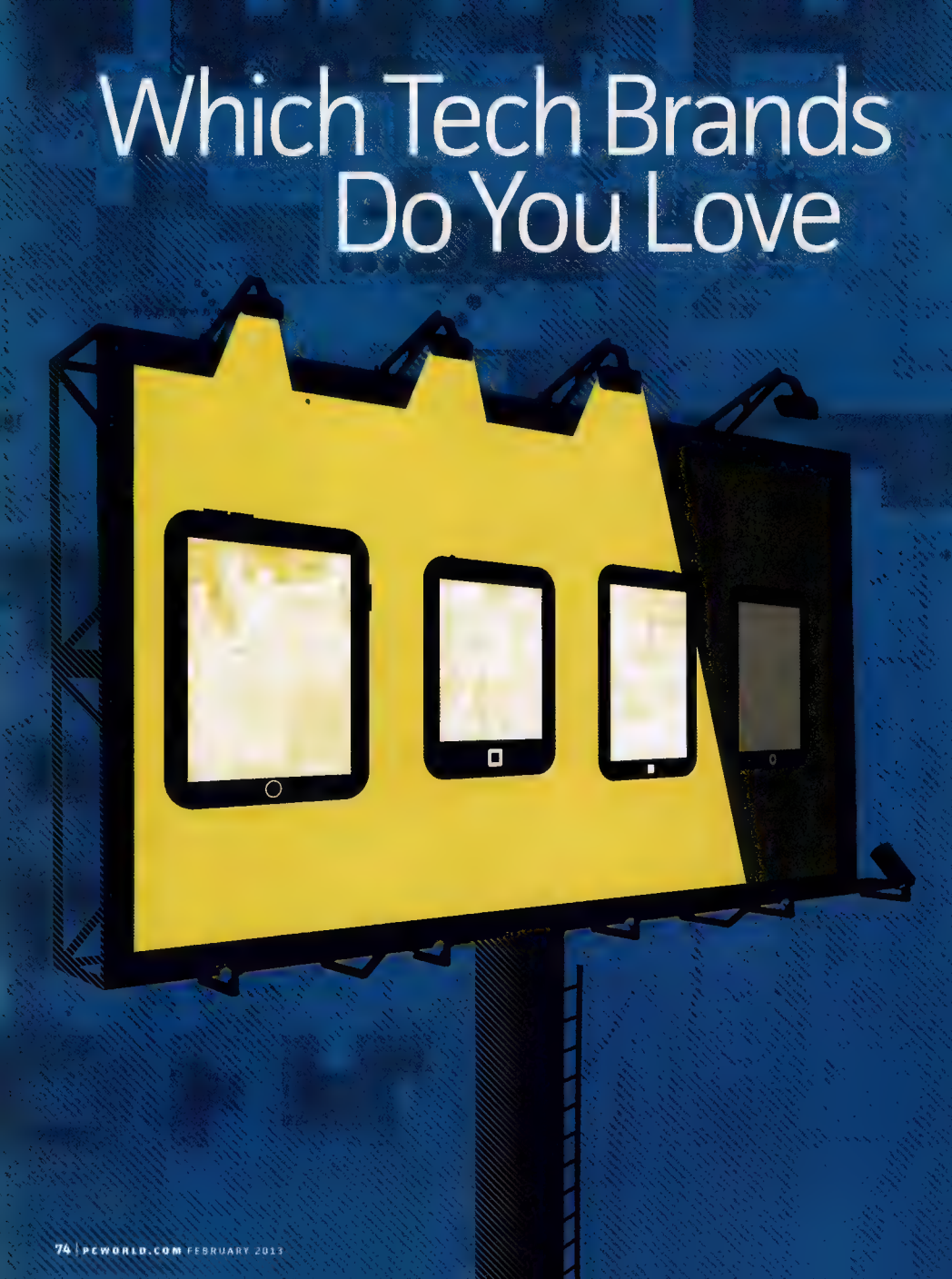
Which Tech Brands Do You Love



(or Love to Hate)?

BY CHRISTOPHER NULL
ILLUSTRATIONS BY GARY HALL

We asked 45,000 PCWorld readers for their opinions on the companies that made their desktops, laptops, smartphones, tablets, and printers. What they said might help you make your next tech buy a smarter one.

ALTHOUGH SOCIETY HAS turned increasingly disposable, technology buyers still want their gear to work well, to look good, and to last for the long haul. In August *PCWorld* launched its annual survey of satisfaction, reliability, and service, polling more than 45,000 *PCWorld* readers.

A New Approach

This year's approach represents a simplification of prior years' methodology, in which we reported the results as below average, average, or above average. Now we provide actual satisfaction scores, usually on a scale of 1 to 10, which should make the results clearer and easier to compare.

We investigated five categories: laptops, desktops, smartphones, tablets, and printers. And users seem to be fairly happy. Overall, the numbers are positive and seem to be improving from year to year. Measures of reliability, for example, have improved considerably since 2011.

Of course, we still found clear winners and losers in the survey. The biggest winner in 2012: Apple. In overall satisfaction, the company took top honors in laptops, desktops, and smartphones, and sat near the top in tablets. Both Samsung and Asus did well in multiple categories; Asus grabbed the lead in tablets, while Samsung topped printers. Lenovo also showed well in several categories

In keeping with history, market-share leaders Dell and HP did poorly on most categories, with their home and business products. Both companies trailed in laptops, and had a fairly weak showing in tablets. They did a bit better in desktops, with their home PCs scoring respectably. In addition, they made significant gains in reliability: For desktops and laptops, reports of problems fell this year, sometimes by 10 percent. HP's business laptops ranked as the second-most reliable.

We also discovered distinctions in surveyed consumers' satisfaction with different categories. The desktops and printers categories had the highest overall satisfaction numbers. Smartphones and tablets, less-mature products that companies are still refining, got the lowest scores.

As a category, tablets received relatively low product-satisfaction scores, but tablet "satisfaction with reliability" scores were high (8.5 out of 10, on average), and only 12 percent of surveyed tablet users reported significant problems. With 18 percent of users reporting trouble, and with a 7.7 rating, smartphones ranked as the least reliable category. And 58 percent of those reporting a phone problem said it was bad enough to seriously impair their operation of the device. »

Laptops

Lenovo keyboards are the absolute best among laptops. I like everything about [mine], from design to function.

—LENOVO LAPTOP OWNER

The world of laptops continues to be dominated by Apple, which had the highest scores in almost all of our satisfaction measurements. With a mere 6 percent of those polled reporting any significant problem with their Apple machine, users also gave top marks to almost all aspects of their MacBooks Only in design, the number of ports, and performance for the price did readers award Apple-like scores to Windows PC makers

Outside of Apple, numbers were fairly consistent, with most satisfaction scores bunched in the 7-to-8 range. Asus, Lenovo, and Sony had slightly higher satisfaction numbers on average; Acer, Dell, and HP for Business fell slightly below the curve.

Universally, consumers reported high satisfaction with their laptops' display quality and said that they were generally satisfied with the port selection on their machines. At the other end, poor speaker quality remained a common complaint, and we also heard gripes about lousy laptop touchpads.

Surveyed readers generally said their laptops were quite reliable. Again, Apple led on reliability, with Dell for Home and HP for Home scoring slightly lower than average.

Laptop reliability problems didn't stray far from two major issues. Hard-drive failure was by far the biggest reported problem on laptops, followed by issues with the operating system.

WHICH laptops break down most?

Above average

- Dell for Home **19%**
- Dell for Business **17%**
- HP for Home **17%**
- Toshiba **16%**
- Sony **16%**
- Asus **15%**
- Acer **15%**

Below average

- Lenovo **14%**
- Samsung **13%**
- HP for Business **11%**
- Apple **6%**

Based on percentage of brand owners who reported a problem significant enough to stop or seriously impair operation of the PC during the first three years of ownership.

APPLE LAPTOP OWNERS PRAISE FEATURES AND RELIABILITY

BRAND	quality		pointing			for the	
Apple	9.2	8.9	8.8	8.6	8.2	8.6	9.3
Sony	8.9	8.5	7.7	8.3	8.1	8.3	8.8
Asus	8.7	8.1	7.6	8.6	8.2	8.6	8.7
Lenovo	8.5	8.5	7.8	8.4	8.2	8.4	8.7
Samsung	8.7	8.3	7.7	8.6	8.0	8.6	8.7
Toshiba	8.7	8.2	7.7	8.5	7.9	8.5	8.7
HP for Home	8.6	8.1	7.5	8.3	8.1	8.3	8.4
Acer	8.5	7.9	7.5	8.5	7.9	8.5	8.5
Dell for Home	8.6	8.2	7.6	8.2	7.9	8.2	8.4
Dell for Business	8.5	8.2	7.5	8.1	7.9	8.1	8.6
HP for Business	8.4	8.1	7.4	8.0	8.0	8.0	8.5

CHART NOTES: Each listed number is the average response from surveyed readers on a 1-to-10 scale where 1 is "extremely dissatisfied" and 10 is "extremely satisfied." Brand ranking is based on the average scores across all feature-satisfaction measures. Dell for Home includes the Inspiron, Studio, and Adamo lines; Dell for Business includes the Latitude, Vostro, and Precision lines. HP for Home includes the Pavilion, Mini, TouchSmart, and Envy lines; HP for Business includes the EliteBook, ProBook, and Mini lines.

HOW DO people use their laptops?

LAPTOP OWNERS most likely to recommend*

Apple **9.3**
Samsung **8.3**
Lenovo **8.3**
Asus **8.3**
Toshiba **8.2**
Dell for Business **8.1**
Acer **8.1**

LAPTOP OWNERS less likely to recommend*

Sony **8.0**
HP for Home **8.0**
Dell for Home **8.0**
HP for Business **7.9**

* The average response from brand owners on a 1-to-10 scale where 1 is "extremely unlikely to recommend" and 10 is "extremely likely." The average score is 8.1.

82%

Percentage of people who are satisfied with the reliability of their laptops.

54%

Percentage of people who had to replace a component to fix a problem with their laptop.

APPLE SUPPORT: "WINNING"

PROBLEMS LEFT UNRESOLVED BY CUSTOMER SUPPORT[1] (Lower is better)	BRAND	OVERALL SATISFACTION WITH SERVICE[2] (Higher is better)
4%	Apple	8.3
7%	Dell for Business	7.0
9%	Asus	6.7
17%	Lenovo	6.5
33%	Acer	6.3
26%	Toshiba	6.3
16%	Dell for Home	6.2
26%	HP for Home	6.2
22%	Sony	6.1

CHART NOTES: We omitted HP for Business and Samsung due to insufficient data. [1] Percentage of brand-owning respondents who answered "yes, somewhat" or "no" when asked whether customer support fixed their problem completely. [2] The average response on a 1-to-10 scale where 1 is "extremely dissatisfied" and 10 is "extremely satisfied." The average score is 6.6.

Laptops that malfunctioned within three years

2011 **23%** VS. 2012 **15%**

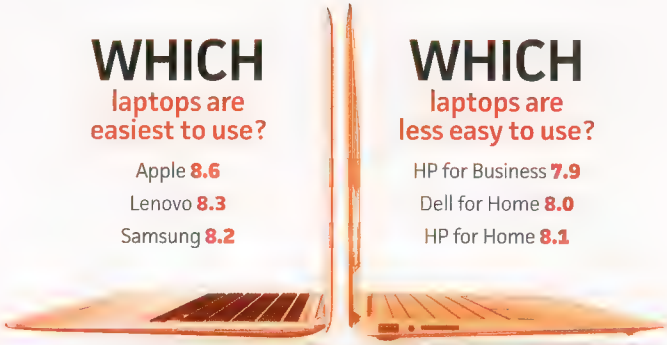
Percentages represent a comparison of the number of people who said they were "very satisfied" or "extremely satisfied" with the reliability of their laptops in last year's survey versus in this year's survey.

WHICH laptops are easiest to use?

Apple **8.6**
Lenovo **8.3**
Samsung **8.2**

WHICH laptops are less easy to use?

HP for Business **7.9**
Dell for Home **8.0**
HP for Home **8.1**



The average response from brand owners on a 1-to-10 scale where 1 is "extremely difficult to use" and 10 is "extremely easy to use." The average score is 8.2.

Desktops

Performance for the price is the key. If they keep putting together good combinations at an attractive price, then I'll keep considering them.

—HP FOR HOME PC OWNER, ASKED WHETHER HE WOULD RECOMMEND HP PCs

Our survey of desktop PC owners paints a somewhat different picture than our poll in the laptop category. Here, performance clearly remains a critical feature, although softer issues such as design and peripheral quality are still areas of discussion.

Compared with laptops, desktops saw a slightly wider spread of satisfaction scores. Apple desktops scored highly on average and took top marks for design and peripheral quality, but surveyed consumers dinged them for relatively poor expandability. The picture gets muddier from there, with most competitors clustered together. HP for Home and Dell for Home landed around the average for satisfaction with desktop features; Sony and eMachines ran significantly behind the pack in that regard. HP for Home and Dell for Home rated just below average for ease of use, while Dell for Business rated slightly above average.

Interestingly, Lenovo for Home and Asus took the highest score (8.8 out of 10) on performance for the price. HP for Home even outscored Apple in this measurement, earning an 8.6 (Apple received a mark of 8.5), and Dell for Home also posted an 8.5. The average score for this measurement among all brands was 8 4.

Although desktops have a reputation for being more reliable than laptops are, this turned out not to be the case when we looked at users' responses: A mere 0.01 point separated laptops and desktops on users' ratings of overall reliability.

As with laptops, hard-drive failure issues were readers' primary desktop reliability complaint. On the other hand, motherboard failures, relatively uncommon on laptops, were tied for the second-most cited problem with desktop computers.

APPLE, LENOVO SATISFY; DELL, HP MAKE FAIR SHOWINGS

BRAND	Operating noise	Design	Quality of included peripherals	Ports and connectivity	Expandability	Performance for the price
Apple	9.1	9.2	9.0	8.5	7.9	8.5
Lenovo for Home	8.8	8.5	8.1	8.4	8.3	8.8
Asus	8.5	8.4	8.2	8.5	8.4	8.8
Dell for Home	8.6	8.4	8.0	8.3	8.3	8.5
HP for Home	8.6	8.4	8.1	8.2	8.2	8.6
Gateway	8.5	8.2	7.9	8.5	8.1	8.6
Compaq	8.4	8.4	8.1	8.2	8.0	8.5
Acer for Home	8.5	8.4	7.9	8.3	7.8	8.5
Lenovo for Business	8.6	8.1	8.1	8.3	7.9	8.2
Dell for Business	8.5	8.0	7.7	8.1	8.0	8.2
HP for Business	8.3	8.1	7.8	8.1	8.0	8.2
Sony	7.9	8.2	8.0	7.9	7.6	7.9
eMachines	8.1	7.8	7.9	7.8	7.3	8.3

CHART NOTES: Each listed number is the average response from surveyed readers on a 1-to-10 scale where 1 is "extremely dissatisfied" and 10 is "extremely satisfied." Brand ranking is based on the average scores across all feature-satisfaction measures. Acer for Home includes the Aspire and AspireRevo lines. Dell for Home includes the Inspiron and Studio lines; Dell for Business includes the Vostro, Optiplex, and Inspiron lines. HP for Home includes the Pavilion and TouchSmart lines; HP for Business includes the HP Pro 3000 line. Lenovo for Home includes the IdeaCenter, Essential, and other lines; Lenovo for Business includes the ThinkCentre and other lines.

WHICH components break most?

Hard drive **16%**
Operating system **11%**
Motherboard **11%**
Graphics card or integrated graphics **9%**
Power supply **7%**

Based on the number of PC owners who identified each component as the cause of a "significant problem."

DESKTOP OWNERS most likely to recommend*

Apple **9.2**
Asus **8.6**
Lenovo for Home **8.5**
Dell for Business **8.2**
Dell for Home **8.1**
Lenovo for Business **8.1**
HP for Home **8.1**

DESKTOP OWNERS less likely to recommend*

HP for Business **8.0**
Acer for Home **7.9**
eMachines **7.9**
Compaq **7.7**
Gateway **7.6**
Sony **7.5**

*The average response from brand owners on a 1-to-10 scale where 1 is "extremely unlikely to recommend" and 10 is "extremely likely." The average score is 8.1

APPLE, LENOVO LEAD THE PACK IN DESKTOP RELIABILITY

BRAND	Any significant problems	Satisfaction with reliability
Apple	10%	9.1
Asus	15%	8.7
Lenovo for Home	11%	8.7
Dell for Home	20%	8.6
Compaq	12%	8.6
Lenovo for Business	10%	8.6
HP for Home	17%	8.5
Acer for Home	17%	8.5
Dell for Business	18%	8.5
▲ ABOVE AVERAGE		
Gateway	20%	8.4
HP for Business	13%	8.4
Sony	12%	8.2
eMachines	11%	8.2

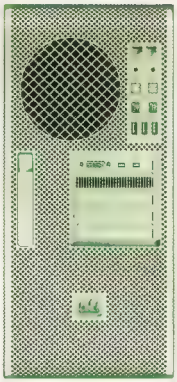
CHART NOTES: A "significant problem" is one that stops or seriously impairs operation of the PC during the first three years of ownership. Satisfaction scores are on a 1-to-10 scale where 1 is "extremely dissatisfied" and 10 is "extremely satisfied." The average score is 8.5.

WHICH desktops are easiest to use?*

Apple **8.8**
Asus **8.5**
Lenovo for Home **8.3**

WHICH desktops are less easy to use?*

Acer for Home **8.1**
Sony **8.1**
HP for Business **8.1**



*The average response from brand owners on a 1-to-10 scale where 1 is "extremely difficult to use" and 10 is "extremely easy to use." The average score among desktop brands is 8.3.

Satisfaction with desktop reliability improving

2010
67%
VS.
2012
81%

Percentage of people who said they were either "very" or "extremely" satisfied with the reliability of their desktop PC in our survey two years ago, versus in this year's survey.

38%
Percentage of problems not totally resolved by customer support.

50%
Percentage of support-seeking PC owners who could not find the help they needed at the manufacturer's website.

»

Smartphones

Quality touchscreens on BlackBerrys would help save the company.

— BLACKBERRY OWNER, ON HOW TO IMPROVE THE PRODUCT

For all the talk of Android's ascendance, consumers remain infatuated with Apple's iPhone, which ran away with top marks in every smartphone feature satisfaction category in the survey aside from text entry. It also swept all ease-of-use measurements except one: Data syncing went to Sony. (In battery life, not listed in the chart here, Apple ranked second to Nokia.)

On the whole, Samsung and HTC did well. The two companies scored similarly on average, but they demonstrated different strengths. Samsung edged out HTC on speed, display quality, and text entry, while HTC was superior on camera quality and GPS capability. Samsung also improved greatly in reliability this year, with far fewer survey respondents reporting significant problems with their Samsung phones.

Consumers were happiest on the whole with their handsets' design—unsurprising considering how homogenous smartphone design has become. Phone owners were, in general, least satisfied with the overall speed of operation of their phones.

Users' estimation of their phones' reliability was about on a par with their overall satisfaction ratings—with Apple taking the top spot—though in general more users reported trouble with handsets than they did with tablets, and on the whole they deemed those problems to be more severe, as well.

As with tablets, users cited operating system failures or malfunctions as the biggest problem on smartphones. Battery issues took second place, followed by touchscreen failures (again, mirroring the number two and three tablet complaints).

We also asked readers about the wireless carriers that sell and support their smartphones, as well as provide the network coverage. Verizon scored highest in satisfaction with call quality, while Sprint trailed among the Big Four. Verizon won again in the speed and reliability of its wireless Internet service, with AT&T, T-Mobile, and Sprint in a virtual tie for second.

APPLE'S IPHONES STILL RULE IN SATISFACTION WITH FEATURES

BRAND	Operating system	Overall speed	Display quality	Camera quality	GPS capability	Touchscreen responsiveness	Text entry	Design
Apple	8.7	8.5	9.1	8.7	8.5	8.8	8.2	8.9
Samsung	8.4	8.2	8.9	8.4	8.3	8.4	8.0	8.5
HTC	8.4	8.1	8.8	8.5	8.4	8.4	7.9	8.5
Nokia	8.0	8.3	8.6	8.1	8.4	8.2	8.2	8.3
Motorola	8.1	8.0	8.7	8.0	8.2	8.1	7.8	8.3
Sony	7.7	7.1	8.3	8.4	7.8	7.7	7.6	8.0
LG	7.7	7.5	8.1	7.5	7.7	7.5	7.5	7.8
Pantech	7.1	7.6	8.2	7.5	7.2	7.6	7.9	7.9
RIM (BlackBerry)	7.1	7.3	8.0	7.5	7.3	7.4	7.6	7.6
Huawei	7.4	6.7	7.9	6.8	7.4	7.2	7.1	7.5

CHART NOTES: Each listed number is the average response from surveyed readers on a 1-to-10 scale where 1 is "extremely dissatisfied" and 10 is "extremely satisfied." Brand ranking is based on the average scores across all feature-satisfaction measures.

Percentage of Samsung owners reporting that they had a 'significant problem' in the past two years.

2011 **33%** VS. 2012 **16%**

APPLE LEADS IN CUSTOMER SUPPORT, WHILE RIM TRAILS

BRAND	Percentage of problems left unresolved by customer support	Overall satisfaction with service
Apple	15%	6.8
HTC	24%	6.6
Motorola	21%	6.4
▲ ABOVE AVERAGE		
Samsung	24%	6.3
LG	22%	6.2
RIM (BlackBerry)	20%	6.1

CHART NOTES: We omitted brands due to insufficient data. The average satisfaction score is 6.4 (out of 10).

WHICH components break most?

Operating system **32%**

Battery **17%**

Touchscreen support **14%**

Microphone or speaker **8%**

GPS function **6%**

Display **5%**

Bluetooth **5%**

Based on the number of people who identified each component as the cause of a "significant problem" within the first two years of ownership

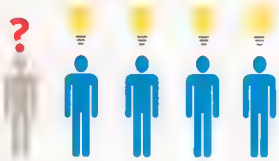
84%

Percentage of smartphones with no significant problems in the past two years.

VERIZON USERS MOST HAPPY WITH NETWORK SERVICE

CARRIER	Call quality	Internet service quality
Verizon	7.2	7.8
AT&T	6.9	7.3
T-Mobile	6.8	7.3
Sprint	6.5	7.3

CHART NOTE: Scores are on a 1-to-10 scale where 1 is "extremely dissatisfied" and 10 is "extremely satisfied."



1 IN 5: 21% OF USERS WERE "SOMEWHAT," "VERY," OR "EXTREMELY" DISSATISFIED WITH THEIR WIRELESS INTERNET SERVICE.

PHONE OWNERS SEE APPLE, NOKIA AS MOST RELIABLE

BRAND	Any significant problems	Satisfaction with overall reliability
Apple	9%	8.5
Nokia	13%	8.3
Samsung	16%	8.2
HTC	21%	8.1
Motorola	21%	8.0
▲ ABOVE AVERAGE		
Pantech	16%	7.6
LG	18%	7.5
Rim (BlackBerry)	19%	7.3
Sony	22%	7.1
Huawei	21%	6.7

CHART NOTES: A "significant problem" is one that stops or seriously impairs operation of the phone during the first two years of ownership. Satisfaction scores are on a 1-to-10 scale where 1 is "extremely dissatisfied" and 10 is "extremely satisfied." The average satisfaction score is 7.7.

WHICH smartphones are easiest to use?*

Apple **8.2**

Samsung **7.9**

HTC **7.9**

WHICH smartphones are less easy to use?*

Pantech **7.0**

Huawei **7.2**

RIM **7.2**

*The average response from brand owners on a 1-to-10 scale where 1 is "extremely difficult to use" and 10 is "extremely easy to use." Our survey ranked the brands based on average scores across six ease-of-use measurements: setup, syncing data, using the Web browser, shooting photos and videos, typing and screen navigation, and overall ease of use.

»

Tablets

This tablet is very fast, with a beautiful display, and fully capable of doing everything I could foreseeably want.

—GOOGLE (ASUS) NEXUS 7 OWNER

Conventional wisdom might tell you that the Apple iPad, with a devoted following that includes everyone from toddlers to CEOs, would sweep the tablet satisfaction ratings, but surprises awaited us when we dug into the numbers.

Yes, Apple earned the best marks in touchscreen responsiveness, battery life, and speed, and very high marks in most ease-of-use measurements. But a number of competitors bested the company in other metrics. When we averaged the overall satisfaction scores, Apple wound up in third place.

Asus—maker of the popular Google Nexus 7—scored in the top of the range in virtually all satisfaction measurements. Market chaser Samsung also earned very high marks overall, matching the best score in operating system satisfaction.

RIM's BlackBerry PlayBook has been widely considered a dud, but people who own the device seem pleased with it. RIM took fourth place among tablet makers in overall satisfaction with device features, garnering the top mark in display quality.

Users' biggest complaint, in aggregate, is the dearth of ports on many tablets. Users seem most satisfied with display quality.

As for reliability, Apple claimed the top spot with flying colors. Only 4 percent of iPad users reported any significant problem within two years of ownership, while an average of 12 percent of owners of other brands reported problems. For users who reported problems, operating system issues were the most common gripe across the board. Battery troubles followed, along with complaints of touchscreen failures.

WHICH components break most?*

Operating system **27%**

Battery **13%**

Touchscreen support **11%**

Power port **8%**

Display **8%**

External storage port **4%**

*Based on the number of people who identified each component as the cause of a "significant problem" within the first two years of ownership.

ASUS, SAMSUNG SHINE IN TABLET SATISFACTION

BRAND	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Asus	8.8	8.6	8.5	8.5	9.1	8.7	7.8
Samsung	8.7	8.6	8.1	8.4	9.0	8.7	7.0
Apple	8.8	8.6	8.5	8.6	9.1	9.0	5.8
RIM (BlackBerry)	8.4	8.3	8.1	8.3	9.4	8.5	6.8
Acer	8.4	8.3	7.6	8.0	8.5	8.1	8.0
Toshiba	8.2	8.1	7.5	7.7	8.5	8.0	8.0
Lenovo	8.2	8.2	7.8	7.9	8.4	7.5	7.8
HP	8.1	7.8	7.6	8.0	8.5	8.1	7.2
Barnes & Noble	8.3	7.6	7.8	7.8	8.8	8.3	6.8
Amazon	8.1	8.0	7.9	8.0	8.7	8.3	5.9
Dell	8.0	8.0	7.0	7.7	8.4	7.9	7.3
Motorola	7.7	8.1	7.4	8.0	8.2	8.0	6.5

CHART NOTES: Each listed number is the average response on a 1-to-10 scale where 1 is "extremely dissatisfied" and 10 is "extremely satisfied." Brand ranking is based on the average scores across all satisfaction measures.

Printers

The printer has been a workhorse. Printing is fast and fairly quiet. Wish toner was cheaper, but it's not bad for this class of printer.

—SAMSUNG PRINTER OWNER

Despite the hype about the paperless office, people still print a lot of files. And despite the grousing about printers, users seem generally satisfied with the devices. This year, 66.2 percent of survey takers said so. However, overall printer satisfaction seems to be declining: In our 2009 survey, 70.4 percent of printer owners said they were completely satisfied.

Looking at the largest printer makers, the most satisfied users were among Samsung's ranks. The company grabbed the top spot in text quality, operating noise, and design. Respondents also favored Samsung for its printers' ease of use.

The other competitors were tightly bunched. Brother, Canon, HP for Business, and Ricoh were separated by just a few hundredths of a point in their overall average satisfaction scores.

Canon's printers were among the most favored for photo and graphics print quality. In a surprise finish, Ricoh earned the highest marks for printing speed and network connectivity.

Overall satisfaction ratings were highest in text printing quality. At the bottom of the spectrum was printer operating noise: No printer manufacturer scored as much as 8 on this metric.

Reliability figures varied considerably. The leader of the pack, Brother, was trailed closely by Canon and Samsung, with less than 10 percent of users reporting significant problems with each of those brands. Unfortunately, numerous brands topped the 20 percent mark in user reports of significant problems within the first three years of ownership: Lexmark, Dell, Kodak, Ricoh, and Xerox all lost points for their high failure rates. ●

WHICH printers are easiest to use?*

Samsung **8.4**

Kodak **8.2**

Brother **8.1**

WHICH printers are less easy to use?*

Ricoh **6.9**

Xerox **7.5**

Dell **7.6**

*The average response from brand owners on a 1-to-10 scale where 1 is "extremely difficult to use" and 10 is "extremely easy to use."

SAMSUNG PRINTERS EXCEL; OTHERS CLOSE BEHIND

BRAND	Text quality	Photo/graphics quality	Printing speed	Network connectivity	Operating noise	Design
Samsung	9.0	8.1	8.7	8.4	7.9	8.4
Brother	8.9	8.0	8.5	8.4	7.8	8.3
HP for Business	8.9	8.3	8.4	8.4	7.6	8.2
Ricoh	8.7	8.2	8.9	8.7	7.5	7.7
Canon	8.8	8.5	8.1	8.3	7.8	8.3
Epson	8.7	8.4	8.2	8.4	7.7	8.2
Xerox	8.9	8.5	8.5	8.3	7.3	7.9
Kodak	8.7	8.5	8.1	8.1	7.4	8.1
HP for Home	8.6	8.2	8.0	7.9	7.4	8.1
Lexmark	8.6	8.0	7.9	8.0	7.5	8.0
Dell	8.6	8.1	8.0	7.7	7.7	7.9

CHART NOTES: Each number is the average response on a 1-to-10 scale where 1 is "extremely dissatisfied" and 10 is "extremely satisfied." Brand ranking is based on the average scores across all measures. HP for Home includes the Deskjet and PhotoSmart lines; HP for Business includes the Officejet and LaserJet lines.

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20 Essential Windows 8 Apps

WINDOWS 8 IS ALL ABOUT THE APPS. Here are the most important ones you should download first. »

SmartGlass

SmartGlass functions like a second screen for your Xbox 360. It keeps tabs of what you're watching or playing and offers complementary information such as achievement charts and additional video content. You can also use your PC as a remote control for your 360, launching videos or games on your HDTV from within SmartGlass. Further, it allows you to track real-time stats while watching sports, queue up songs in a dance game, or check your in-game GPS while racing. Microsoft will update the app with a bevy of new features to accompany the Windows 8 launch.

Microsoft Minesweeper

Windows 8 is the first version of Windows since 3.1 (released way back in 1992!) that doesn't come with Minesweeper preinstalled; but if you're feeling nostalgic, you can download the game for free from the Windows Store. The classic guessing gameplay of Minesweeper remains the same as it ever was, but Microsoft has updated this Windows 8 version with a fresh coat of paint and some new features, including an Adventure mode, online leaderboards, and the ability to log in with your Xbox Live account and earn Minesweeper Achievements.

IM+

Everyone needs a good, free instant messaging client, and though the Windows 8 Messaging app is functional enough, as of press time for this issue it supported only the Windows Messenger and Facebook chat services. That situation may change in the future, but if you want to chat with your friends across disparate chat networks such as AIM, Facebook, Google Talk, ICQ, and Jabber, the IM+ app has you covered right now. Not only is it free, but also it supports a variety of chat networks, and it lets you enable push notifications so that you can stay on top of your social life no matter what app you happen to be using.

Box

The free 7GB of SkyDrive storage space that Windows 8 hands out to new Microsoft accounts is plenty if you just need to sync your photos and personal documents. For serious cloud storage, however, many businesses and business professionals turn to Box. Whereas most cloud lockers focus solely on consumers, Box offers Business and Enterprise storage options, along with several consumer-friendly features. These include a 99.9 percent uptime guarantee, full text search, document collaboration, and restorable version histories IT nerds will be happy, too, thanks to robust administrative controls, strong security features, and comprehensive audit trails. But this slick Windows 8 app does have a few quirks. Unlike the Web app, for example, it relies on third-party programs to open files. Nevertheless, overall it's a great piece of software for business professionals and for small-business owners.

Reddit To Go

Reddit To Go is the best Windows 8 app currently available for browsing Reddit. Though you could simply browse Reddit in your Web browser, Reddit To Go looks great on a high-resolution screen and makes it easy to browse subreddits, vote on posts, and share stories back and forth between Reddit To Go and other Windows 8 apps via the Share charm. Another nice feature: You can leave the app running in the background if you want to receive notifications of new messages and Reddit activity. You can also pin the front page of Reddit or any subreddit to your Start menu as a live tile. This feature gives you a great way to stay abreast of what's going on in your community at a glance, and it's the best reason for using a dedicated Windows 8 Reddit app on your PC. »

TuneIn Radio

There are more than 14,000 radio stations in the United States, and TuneIn Radio will let you listen to most of them—plus a bunch more from across the world—for free. Though you could always stream your favorite radio station from your browser, TuneIn has done a fantastic job of bringing together a huge variety of AM/FM radio streams and podcasts in one slick app that's simple to navigate. The sound quality is great, playback rarely stutters, the TuneIn live tile displays information on what's currently playing, and you can choose from more than 70,000 talk shows, sports broadcasts, news programs, and local radio broadcasts and podcasts.

Evernote

A perennial favorite at *PCWorld*, Evernote is one of the best free tools available for staying on top of your to-do list because you can access it from anywhere on almost any device, including your new Windows 8 PC. The Windows 8 app packs all the functionality of Evernote into a custom interface graced with big, beautiful buttons designed to make swiping through on your touchscreen extremely easy. You can create and view notes and notebooks, clip websites and data from other apps in your Evernote notebook for later, and share your notes and notebooks with other Windows 8 apps and Evernote users.

Clock

This Windows 8 app does what exactly it promises on the tin: It places a live tile on your Start screen that shows you the time. That accomplishment sounds simple enough, but Microsoft failed to include an option for users to see the time without pulling up the charms bar to display the system clock. The Clock app is a free, simple item for anyone who wants the convenience of being able to check the time without pulling up a menu bar. You can also use the Clock app to set a timer, run a stopwatch, or set different alarms for yourself.

The New York Times

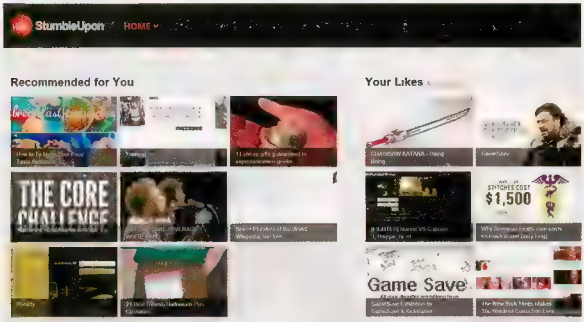
If you subscribe to the *New York Times*, the publication's Windows 8 app deserves a prime spot on your Start screen. The Gray Lady looks gorgeous on a high-resolution screen, with beautiful photography that complements the latest stories from the print *New York Times* as well as from NYTimes.com. The Windows 8 app also improves on the typical desktop reading experience by letting you save stories, share them with friends, and pin whole sections to your Start screen as live tiles so that you can keep tabs on breaking news.

Norton Satellite

Even if you don't subscribe to Norton AntiVirus, download this free Windows 8 app to stay on top of your social network security. Sure, you can use Norton Satellite to scan files on your PC, external storage drives, and Dropbox account to ensure that they're safe, but the best feature of this app is its ability to scan your Facebook feed for malicious links. If you trust Norton Satellite with your login information, you can link this app to your Facebook account and use it to verify Facebook links before you click them. That fantastic feature justifies saving a spot for this app on your Start screen.

StumbleUpon

Whether you are an avid Stumbler or a first-time user, consider adding the free StumbleUpon app to your new Start screen. StumbleUpon is a fantastic way to discover interesting things online, and the Windows 8 app makes finding your next favorite video or story even easier, by updating the live tile with websites tailored to match your tastes. In addition, installing the Windows 8 StumbleUpon app will allow you to share websites, audio, and video with StumbleUpon via the Share charm.



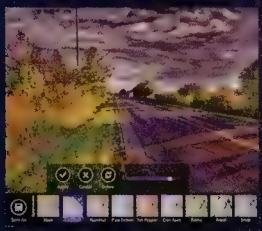
Stanford University

Many universities now offer some or all of their coursework online for free to anyone interested in self-study, but few institutions have a dedicated app in the Windows Store—much less one as slick and simple to navigate as the Stanford University app. Download it for free when you're setting up your new Windows 8 machine, and you'll be able to flip through video lectures and course notes at your leisure. New material gets uploaded pretty frequently, and the live tile will update automatically whenever there's something new for you to learn. A few of the videos feel more like advertisements for prospective students (and their parents), but many of the webinars and lectures are interesting and informative. »

EXCELLENT ALTERNATIVES TO PREINSTALLED WINDOWS 8 APPS

THE APPS THAT come preinstalled with Windows 8 are decent enough, but power users will quickly hit the limits of their usefulness. Thankfully, the Windows Store stands ready with countless alternative apps, to satisfy your unique needs.

For example, the Photos app does a decent job of collecting images from your disparate devices and storing them in a single location, but it doesn't let you edit your photos. If you want to do some light photo editing from within Windows 8, check out the free Photoroom app in the Windows Store. Photoroom lets you crop, resize, and retouch a photo, and then save the edited version back to your Photos app as a .jpg or .png file.

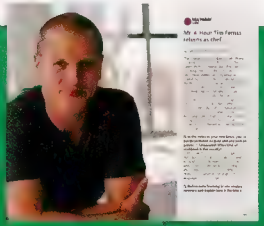


Photoroom lets you edit your photos.

Similarly, if People isn't living up to your social-media standards, take a look at FlipToast. It's a free app that gathers Facebook, Twitter, LinkedIn, and Instagram under one roof. Your FlipToast home screen will be packed with the most recent posts and photos across your social networks. It's definitely one of the best social networking apps available.

Invoice 360

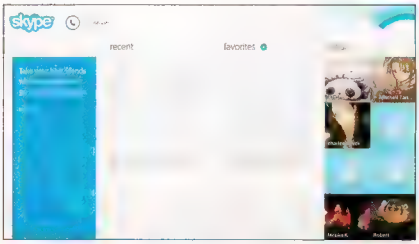
Every freelancer and small-business owner has a different method of filing and tracking invoices, but they all have the same needs: an invoicing system that makes filing and tracking invoices quick and easy. The Invoice 360 app does all of that and more, with custom invoice templates that you can use to create a professional-looking bill or pricing quote in minutes. The option to save company and transaction details helps you quickly plug information into invoices. You can also manage every granular option in the drill-down Inventory and Customer pages. Invoice 360 supports printing, PDF generation, and soft-copy sharing via the Windows 8 Share charm, with a copy of each invoice popping up in your History page. Even better, it's free!



USA Today

USA Today was one of the first major media outlets to publish an app to the Windows Store, and the USA Today app remains one of the best sources for general news and information available there. The app is separated into sections for news, sports, life, money, tech, and travel; and within each category you can browse pictures, videos, and other content. It's easy to navigate thanks to big, beautiful Windows 8 tiles, and every story comes with a captivating picture. If you let it, the app will use your location to update you on your current local weather conditions.

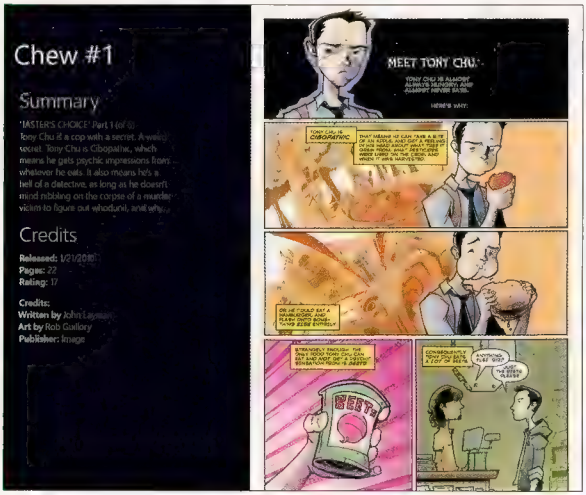
Skype

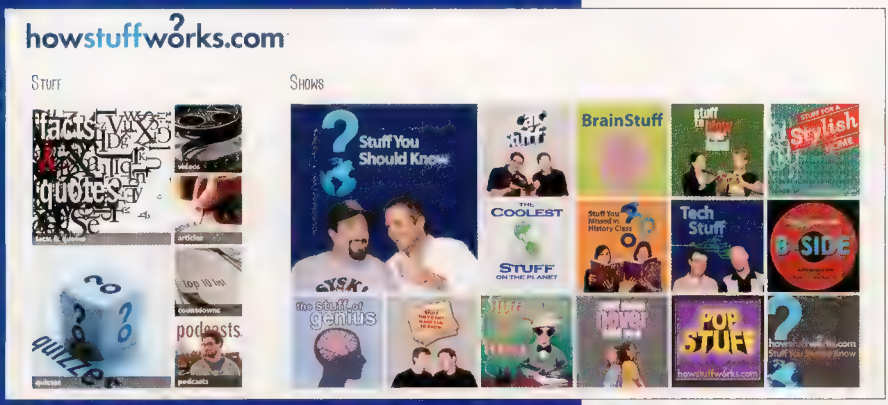


Skype is a fantastic tool for communication, and it's available via an equally fantastic Windows 8 app. Download it for free and keep Skype running in the background; it will display notifications of your messages and calls, while the live tile shows you previews of messages or missed calls right from the Start screen. Skype for Windows 8 will also pull contact information for your friends, family, and coworkers from your People app, making it an excellent communication tool for anyone whose primary machine is a Windows 8 PC.

Comixology

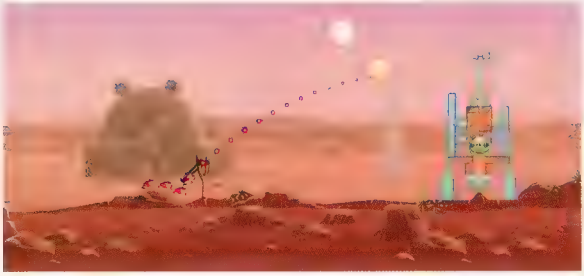
Comics and graphic novels have evolved tremendously since Superman first graced the cover of *Action Comics*, and there's no better way to view them in all their digital glory than with the assistance of the Comixology app. If you've never read a comic on a high-resolution screen, you're missing out on a truly pleasurable experience; thankfully, a bunch of free issues are available for download in the Comixology store. If you like what you see, you can continue to purchase new and classic comics through the Comixology app, and then download them from the cloud and read them on your Windows 8 laptop or tablet, or on any other device with a Comixology app installed.





HowStuffWorks

The HowStuffWorks Windows 8 app bundles all of the excellent articles, videos, and podcasts from the HowStuffWorks website into a package, and plops it down on your Start screen with a live tile that updates you whenever there's something new to check out. The app has a few peccadilloes (the tiles look cramped, and the podcasts stop playing when you switch to another app) that suggest it was rushed out to hit the Windows 8 launch date, but HowStuffWorks is still a great free app that deserves a permanent spot on your Start screen.



Angry Birds Star Wars

You don't need to be a fan of Angry Birds or *Star Wars* to enjoy this excellent game. The Angry Birds games became mega-popular due to an addictive blend of adorable characters and maddeningly challenging levels, and this version adds the classic *Stars Wars* theme into the mix. The result is an excellent game that forces you to solve puzzles by launching cartoon birds through space. You can play this game on your Windows 8 PC, but it's best enjoyed on a laptop or tablet with a touchscreen.

eBay

The eBay app is beautiful and easy to use, but most important it takes advantage of the Windows 8 Start screen in ways that make it more useful to savvy shoppers than the standard eBay website is. Anyone can use the app to efficiently search eBay for deals and to sort through tracked auctions and saved eBay searches, but dedicated deal hunters can also pin the Daily Deals tracker to their Start screen to stay abreast of the savings opportunities at a glance. It's a must-have for eBay enthusiasts, and even casual shoppers may find the new Windows 8 interface appealing enough to transform the typically laborious eBay browsing process into a pleasant shopping experience. ●

Here's How

Upgrade an Impossibly Old System to Windows 8

You can take advantage of Window 8's in-place installation to upgrade a Windows XP system to the new OS. But should you?

BY LOYD CASE

PERFORMING A WINDOWS 8 upgrade on an ancient Windows XP machine isn't a good idea. But I wanted to see what was possible, and maybe gain some insight into the Windows 8 setup process along the way. Here's what I learned.

I built the (admittedly garish) test system back in 2004, not long after the Northwood variant of the Pentium 4 shipped. The components inside are geriatric by modern PC standards. To wit:

- 3.4GHz Pentium 4 CPU (socket 478!)
- Abit IC7-G motherboard with Intel 875P chipset
- Two 1GB DDR-400 DRAM modules (2GB total)
- ATI Radeon HD 9800XT AGP graphics card with 512MB frame buffer
- 320GB Western Digital hard drive (IDE)
- Two 250GB Western Digital hard drives (in RAID 1)
- Sony DVD recorder (16X)
- Two Asus 52X CD-ROM burners
- 520W Vantec power supply

To complicate the upgrade, Abit is now out of business. Vantec still makes low-cost peripherals, but it is no longer in the power-supply business. For these and other reasons, the system posed some problems for Windows 8.

PHOTOGRAPHS: ROBERT CARDIN

First Upgrade Attempt

This P4-based system originally ran the 32-bit version of Windows XP. The last time I used it was several years ago as a license server for 3ds Max 8. I uninstalled the license server and a few other applications, mainly to make the system small enough to back up to the secondary 250GB RAID array. Then I ran Windows 8 setup from a DVD.

I first tried 64-bit Windows 8, but was told that only a clean, fresh install would be performed. So I resigned myself to installing 32-bit Windows 8. Even so, the OS setup retained only data files, dropping all of my applications!

Windows 8 setup runs a compatibility checker when it's first activated. The only incompatibility I encountered was the RAID array. So I rebooted the PC into the RAID BIOS and deleted the RAID array, repartitioned and reformatted the pair of 250GB drives, and ran another image backup.

With that prep work out of the way, the Windows 8 setup progressed as it should, until the first reboot—at which point the screen displayed a 0x0000005 error, and "Press CTRL-ALT-DEL to restart."

Of course, restarting only re-created the same error.

A Google search revealed that Windows 8 requires Data Execution Prevention (DEP), a CPU and motherboard feature that helps prevent malware or poorly designed applications from running program code out of parts of memory allocated for data. The motherboard BIOS, in particular, must offer a DEP setting, which has to be enabled.

I knew I was doomed.

My system's motherboard, built by a defunct company, already ran the last available BIOS update. I sadly verified the lack of a DEP setting.

Pillage Your Parts Bin

Then I remembered the image backup and decided to try to replicate the system as closely as possible, but with enough hardware updates to enable Windows 8 to run. In my pile of parts I uncovered an Asus P5B Deluxe motherboard and an Intel Pentium D 965.

The Pentium D is built on an updated version of Netburst, the architecture Intel used to create the original Pentium 4. Unlike the P4, the Pentium D is a dual-core CPU—though it's really two separate CPU cores combined in a single LGA775 package; Pentium D units are still readily available.

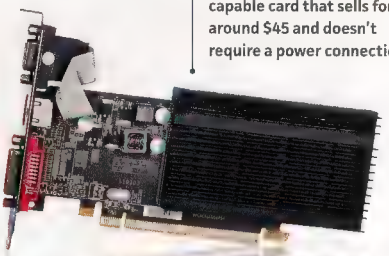
The Asus motherboard is built on a P965 chipset that's several generations newer than the 875P used in the Abit board. In practical terms, that meant the 320GB IDE boot drive used in my old P4 system wouldn't work. The optical drives needed the lone IDE connector on the P5B.

The two Western Digital 250GB drives were SATA, however, so I swapped in a 320GB Seagate SATA drive. The Seagate drive is faster than the original, but I knew it wouldn't have a major »

Graphics Boards

OLD The ATI Radeon 9800XT AGP graphics board once offered the acme of graphics performance.

NEW AMD's Radeon HD 6450 is an entry-level, DirectX 11.1–capable card that sells for around $45 and doesn't require a power connection.



impact. I also used two 1GB DDR2 modules, since DDR1 wouldn't work with the P5B. And finally I swapped out the AGP 9800XT graphics card for a Radeon HD 6450—a very low-end card that doesn't require a power connection.

After I made these changes, the system BIOS indicated that DEP was now an option. So I turned it on. Then I recovered the original Windows XP partition. After a reboot, I updated the chipset drivers and installed new graphics drivers.

At that point, Windows XP began generating memory errors, due not to a hardware incompatibility, but to a bug causing a Microsoft service to crash repeatedly. That symptom told me I was using Windows XP Service Pack 2, which had some problems with Data Execution Prevention turned on. So I updated to XP Service Pack 3. The errors continued, but less frequently.

Windows 8 Redux

I popped in the Windows 8 DVD and walked through the setup process. This time, it all went smoothly. The system rebooted a couple of times, and soon I was running a very hot, very noisy Windows 8 system. On the Windows Experience Index, it generated a whopping 4.4, with a processor mark of 5.5. Modern CPUs tend to max out at 7.0 to 7.8. Still, that 5.5 rating was better than I had expected.

True, the hardware build I ultimately used for Windows 8 isn't the one I started with. The graphics card swap introduced a particularly significant change. The Radeon HD 6450 is an entry-level, low-end graphics card, but it's DirectX 11.1 capable, which instantly made my system more responsive in Windows 8.

Even discounting the GPU, the system seemed more responsive when running Windows 8. The 2GB of memory and the slow hard drives made things drag, and the old CPU didn't help, but the whole affair hung together better than I thought it would.

Bottom Line: Not a Great Idea

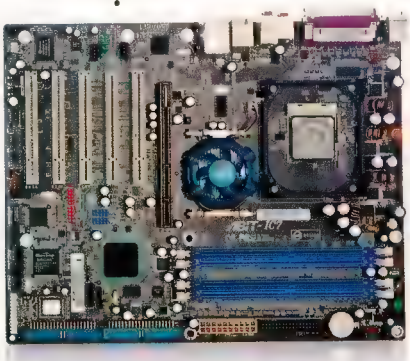
Few people are likely to try to upgrade an existing XP system to Windows 8. However, I learned some things from this crazy little project:

- An in-place upgrade of Windows 8 over Windows XP is actually a clean install that saves your user files but kills your applications.
- Despite blowing away your software, you can't do an in-place upgrade with 64-bit Windows 8, even if the CPU is 64-bit capable.
- For Windows 8 to work, the system must support Data Execution Prevention, and DEP must be enabled.
- Windows 8 can run on just 2GB of RAM, after all!

In the end, you should probably back up your data and perform a clean Windows 8 install. If you're running more-recent hardware—a Core 2 Quad, say—Windows 8 is a viable path. But if you're running a 32-bit OS, I recommend backing up and installing a 64-bit OS instead, so you can install more usable memory.

Motherboards

OLD This Abit IC7-G motherboard came with Intel's 875P chipset and a 3.4GHz Pentium 4 CPU. Abit is now defunct.



NEW Asus's P5B Deluxe motherboard carries Intel's P965 chipset and a dual-core Pentium D 965 processor.

PHOTOGRAPH ROBERT CARDIN

Master VLC, the Perfect Windows Media Player for Power Users

VideoLAN's extremely capable media player comes with a daunting array of useful tools. Here's how to harness their power for good.

THE STANDARD version of Windows 8 lacks Windows Media Center and can't play DVDs by default. All the more reason to try VideoLAN's free VLC media player (go.pcworld.com/vlc)—a versatile and extremely capable app.

VLC streams files to and from the Internet, plays DVDs and Blu-rays, manages podcasts, and captures webcam videos. It's an outstanding media player for power users.

Because VLC's many options can be intimidating initially, I'll explain what the buttons and menus do, show you how to watch movies and Internet streams, and tell how to get the most out of this player.

Play whatever: VLC can play audio CDs, VCDs, SVCDs, and standard DVDs without a hitch. Experimental Blu-ray disc support was added early in 2012, but the Blu-ray encryption system can make playback more miss than hit. Another option: Consider using MakeMKV (go.pcworld.com/makemkv) to rip the movie to your hard drive, and then watch it as you would any other video file in VLC, by selecting *Media* ▸ *Open File*. MakeMKV works with both BD+-encoded Blu-rays and older AACS-encoded Blu-rays. And VLC supports almost any file type you throw at it, including ISO disc images.

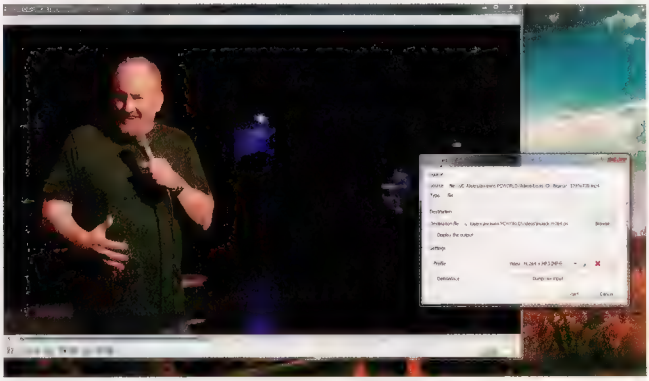
VLC also plays movies and music streamed from the Internet or over a local network via the *Media* ▸ *Open Network Stream* command. Another command, *Media* ▸ *Open Capture Device*, displays input from webcams or TV tuner cards so that you can save, stream, or view the incoming feed, as you prefer.

Capture video stills: VLC includes a feature that lets you easily take screenshots from a video. To use this tool, simply select *Video* ▸ *Snapshot* to save a picture of an individual frame. VLC will save screenshots to your Pictures folder by default, with the name 'VLC-*date and time*'. You can adjust the options in *Preferences* ▸ *Video* ▸ *Snapshot* if you want VLC to dump screenshots somewhere else.

Stream podcasts: VLC has several audio options that can help you manage your podcasts or find something new to listen to. Click *View* ▸ *Playlist* to bring up the playlist view, and then click *Internet* to reveal a multitude of listening options, including hundreds of free Internet radio stations from around the world. To track your favorite podcasts, click the gray plus (+) button next to the *Podcasts* option and enter the URL for the RSS feed of each podcast that you want to stream.

Customize with skins: VLC is as unadorned as a piece of software can be. But you can change the media player's look with custom skin files. Download a skin from the VLC website, and choose *Tools* ▸ *Preferences* ▸ *Interface*. In the 'Look and Feel' portion of the Interface options, select *Use custom skin* and point VLC toward your saved .vlt skin file. Dozens of different skins are available.

Transcode files: Not all programs or outside A/V sources handle esoteric file types as well as VLC. Luckily, VLC is a media converter, too!



VLC makes it easy for you to transcode a video file into an audio file, or vice versa.

Transcoding existing media files into a different format isn't hard. Begin by clicking *Media* ▸ *Convert/Save*; then click the *Add* button, and select an audio or video file to convert. If you have a subtitle file for the film, check the box and select it, as well. Press *Convert/Save*, click *Browse*, and choose a place to save the new version of the file. Name the file, and assign it a file extension from the ones listed in the 'Save as Type' field. Confirm that the ex- »

tension correctly matches the file type you're converting.

I recommend sticking with the default profiles for video (MP4) and audio (MP3); both formats enjoy wide support. See the wiki at VideoLAN's website (go.pcworld.com/vlanwiki) for more information about codec types.

You can fine-tune the audio/video codec combinations further by clicking the *Edit* button (its icon shows a screwdriver and a wrench) to the right of the drop-down box. When everything looks good, click *Start* and prepare to wait: Transcoding video is a CPU-intensive operation.

Copy content: VLC's Convert/Save options let you pull streams from network sources and webcams, or copy media from physical discs. Before you begin, make sure you have a legal right to copy the content. Likewise, don't make backups of physical discs unless you own them.

To copy a disc, open *Media* ▸ *Convert/Save*, and click *Disc* to select a disc to rip. The options are the same ones as for a straight file-to-file conversion. To copy the disc's original files, check *Dump Raw Input*.

To save a webcam or Internet stream, use *Media* ▸ *Open (Network Stream or Capture Device)* to open the file, click the arrow to the right of Play, and select *Stream* from the list. Identify the source, press *Next*, make sure that the destination is set to File, and then fiddle with the transcoding options the same way you would when saving a DVD or doing a file-to-file conversion.

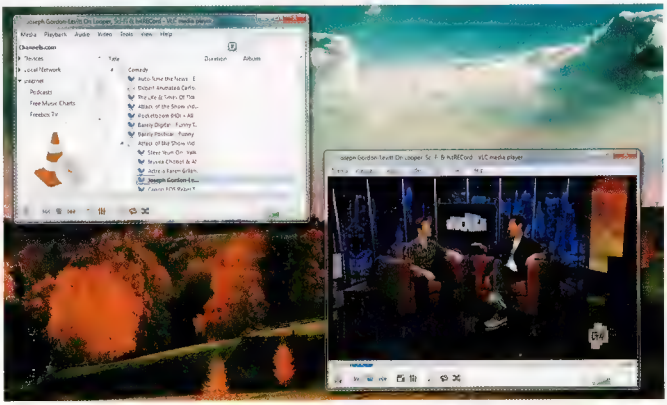
To capture the video you're watching at any particular time, click the *Record* button. If you want to add the Record button to the toolbar, click *View* ▸ *Advanced Controls*.

Turn videos into ASCII art: For fun, VLC can transform video into ASCII art consisting of numbers and letters.

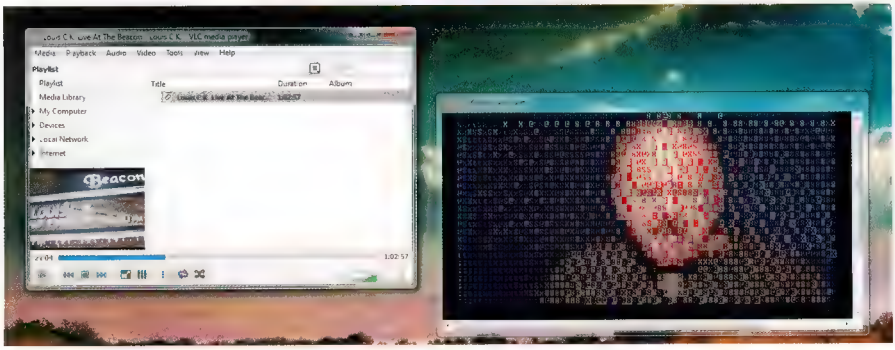
Select *Tools* ▸ *Preferences* ▸ *Video*. Then click the drop-down box next to *Output* (in the Display section) and select *Color ASCII Art Video Output*. Start a new video, and enjoy the text-based show. When you're done, change the output back to *Default*.

Check out VideoLAN's incredibly helpful wiki and forums (go.pcworld.com/vlanforums) for more tips.

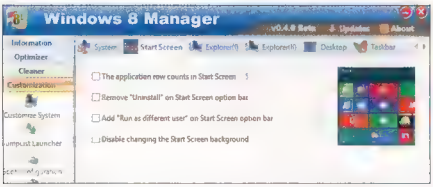
—*Brad Chacos*



Stream free content via the ▶ preloaded Internet playlist.



▼ **Transform** videos (like this one of Louis C.K.) into ASCII art by using a special VLC feature.



Windows 8 Manager lets you control your Win 8 Start screen.

Try Windows 8 Manager

YAMICSOFT'S FREE Windows 8 Manager utility (go.pcworld.com/win8mgr) offers several unique features for Windows 8 customization.

Installing Windows 8 Manager is easy. Just download the .zip file, unzip it to your PC, and run the application. Once the app is loaded, click *Customization* in its leftmost sidebar to see some powerful direct customization options.

One option lets you manually set how many rows you'd like your tiles to occupy on the Windows 8 Start Screen, resulting in better-organized apps and a more pleasing appearance for Windows 8.

Another possibility is to remove the 'uninstall' option from the right-click, bottom-bar menu of the Start Menu tiles; and yet another is to introduce the option to 'Run as different user'.

Open the *Explorer (I)* tab, and you'll be able to manually adjust Desktop Mode's File Explorer, including the ability to hide the various items in File Explorer's leftmost window pane, such as 'Homegroup' and 'Libraries', along with any 'Network' options. This capability is useful if you want to control other users' freedom to access your files and folders on the Desktop.

The lion's share of what Windows 8 Manager can do isn't geared toward Windows 8 in particular (you won't find a way to disable the Start Screen outright, say), but the tools are still useful for people who want a bit more control over the look and feel of their operating system.

For instance, you can reduce the size of your <Alt>-<Tab> icons and disable various Aero features in the Desktop tab within the standard Customization window.

The Taskbar tab lets you prevent your open windows from grouping within application icons, ditch previews entirely, and kill all the recent files that could otherwise appear in each icon's jump lists, to name a few tweaks.

Windows 8 Manager offers a fantastic amount of customization options for free, and you can register the product for $30 in order to receive free technical support and future updates. It's easy to use, easy to apply, and easy to revert from—the three most-wanted elements of any OS-tweaking utility.

—David Murphy

PHOTOGRAPH: ROBERT CARDIN

ANSWER LINE

? I don't like those pesky little arrows that Windows displays on shortcuts How can I remove them? - *Mike Littman*

LINCOLN SPECTOR

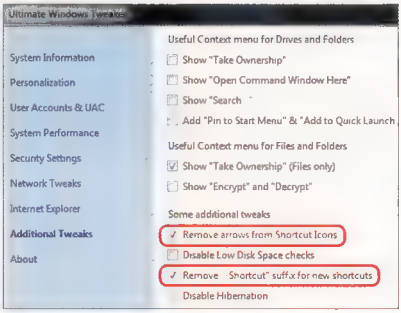
YOU CAN GET rid of the arrows by altering a Registry setting, but you're better off using free software to make the change for you.

If you're using Windows XP, download and install Microsoft's TweakUI (go.pcworld.com/tweakui), if you haven't already. This is one of those programs that every XP user should have. Removing the arrows is only one of its useful functions.

If you don't want new shortcuts to be named "Shortcut to...," select *Explorer* in the left pane. Scroll down the settings list to *Prefix "Shortcut to" on new shortcuts*, and uncheck that option. This setting may require a reboot. Once TweakUI is running, expand the *Explorer* section in the left pane, and select *Shortcut*. In the right pane are four 'Shortcut overlay' options, including None. Make your choice, and then click *Apply* or *OK*.

Microsoft didn't create a TweakUI for Vista and later versions of Windows, but Ramesh Kumar did—and his free, portable Ultimate Windows Tweaker (go.pcworld.com/uwt) runs fine in Windows Vista, 7, and 8.

In the program's left pane, click *Additional Tweaks*. Check *Remove arrows from Shortcut Icons*, and/or *Remove "-Shortcut" suffix for new shortcuts*, and then click *Apply*.



Check these options in Ultimate Windows Tweaker.

Avoid Windows 8 Malaise With Classic Shell

CLASSIC SHELL MAY be the ultimate free tool for bypassing Windows 8's controversial tile-based interface

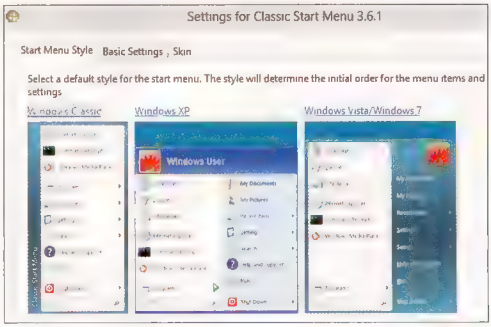
Just download Classic Shell (go.pcworld.com/cshell) and let the utility install with all its default options enabled. You'll see a new icon in the lower-left corner of Desktop Mode's taskbar. Click it (or press the <Windows> key on your keyboard), and a Windows Start menu very like the one in Windows Vista or Windows 7 will appear. Alternatively, right-click the icon, select *Settings*, and click the *Start Menu Style* tab to transform it into a version that looks like classic Windows XP.

To access the normal Windows 8 Start screen from Classic Shell, hold down the <Shift> key and click Classic Shell's *Start* button (or press the <Windows> key).

In the Settings window, toward the bottom of the Basic Settings tab, is an option for *Skip Metro Screen*. Uncheck this entry if you ever want to abandon Classic Shell and restore the normal Windows 8 Desktop.

Click the *All settings* button toward the bottom-left of Classic Shell's Settings menu, and you'll get 13 tabs (in place of the previous 3 tabs) for further customizing your Start menu. Noteworthy to Windows 8 haters is the Windows 8 Settings tab, which contains an option for changing the reach of 'Disable active corners' from 'Start screen' to 'All'. Doing this will remove the Modern UI bits that otherwise pop up when you hover your mouse in one of the corners of your screen.

—David Murphy



Classic Shell offers several Start menu items for unhappy Windows 8 users.

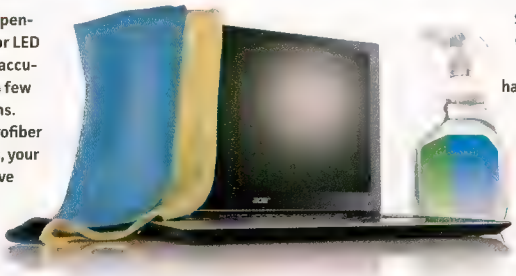
EASY FIX: CLEAN YOUR MONITOR OR LAPTOP SCREEN

YOU DON'T NEED an expensive kit to clean an LCD or LED screen. You can remove accumulated smudges with a few common household items.

First, you'll need a microfiber cloth. If you wear glasses, your optometrist probably gave you one with your last pair of spectacles—though you might want to use a bigger cloth to clean a large screen. You can purchase them for a few dollars from several websites, as well as from a photography store.

Use the dry cloth to gently wipe away the grime. If dirt stubbornly adheres to the screen, you can apply some gentle pressure—but *gentle* is the operative word.

If that approach doesn't work, use a moist cloth. But how do you moisten it, and with what? You should definitely not use soap, a window cleaner such as Windex, or any liquid that has alcohol as an ingredient. Instead, obtain an empty spray bottle (like the microfiber cloth, they're inexpensive and readily available), and fill it with a mixture of approximately equal parts distilled water and white vinegar.



Safely clean your LCD screen with a microfiber cloth.

Before applying any liquid, separate the screen from its power source. If the screen is attached to a monitor or a TV set, unplug it. If it's part of a laptop, phone, or tablet, shut it down, unplug any cord, and (if possible) remove the battery.

Spray the water/vinegar mix onto the cloth, not the onto screen. Then wipe the screen gently, as described above.

Wait for the screen to dry before plugging it in or reinserting the batteries, and powering it up. *—Lincoln Spector*

PHOTOGRAPH ROBERT CARDIN

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Use Backups in Windows Phone 8

BECAUSE WINDOWS Phone 8 is integrated with SkyDrive, backing up your data is easy.

You can turn SkyDrive, Microsoft's cloud service, on or off from the Settings section of your Windows Phone 8 handset, though you must sign in with your Microsoft account first. From Settings, choose *Backup*, and then pick what you'd like to include.

If you need to restore your phone, keep in mind the Start screen will default to its original set of Live Tiles, and you'll have to set up Wi-Fi connections again. Turning off backup for text messages won't delete previously saved messages. To do that, you must turn on backup and delete the messages from your phone.

To restore a backup to your Windows Phone 8, first sign in to the Microsoft account you used to create the backup; when prompted, choose the backup you'd like to use. Tap *Next*, wait for the backup to download, and then tap *Next* again. You'll need to enter passwords for your restore accounts, or you can skip this step and just tap *Done*.

—*Amber Bouman*

Back up your Windows phone.

HASSLE-FREE PC

Add Media Center to Windows 8 for Free

RICK BROIDA

If you've used Windows Media Center in the past, here's how to get it for Windows 8 gratis. Also: Restore the Hibernate option in Win 8.

MICROSOFT PLANS TO charge $10 for Windows Media Center. But if you have Windows 8 Pro, you can get Windows Media Center free for a limited time. Here's how:

1. Head to go.pcworld.com/8pack, scroll down, and fill out the short form to request a free product key.

2. Once you've received the email with the key, press <Windows>-W to bring up the Settings menu, and then type add features.

3. Tap or click *Add features to Windows 8*, then tap/click *I already have a product key*.

4. Type or paste in your product key, click *Next*, read every last word of the licensing agreement (kidding!), and then click *Add features*.

Presto! You have Windows Media Center—after a reboot, of course.

This offer is good through January 31, 2013. If you don't have the Pro version of Windows 8 and you want WMC, however, you'll need to pony up $70 to get the Windows 8 Pro Pack. That's something to think about as you ponder your OS upgrade plans.

Enable Hibernate Mode in Windows 8

You may have noticed that the Power menu in Windows 8 has no visible Hibernate option. You can click 'Sleep', 'Shut down', or 'Restart', but you can't hibernate your PC.

Thankfully, restoring that valuable option is fairly simple. Here's how to do it:

1. Press <Windows>-W to bring up the Settings Search menu, and then type power.

2. In the resulting list of power settings for your system, click *Change what the power buttons do*.

3. In the same list, click *Change settings that are currently unavailable*.

4. Scroll down to the bottom of the power settings window to find the 'Shutdown settings' section.

5. In that section, click the box next to *Hibernate* to enable the option.

6. Click *Save changes*.

Hibernate mode isn't gone in Windows 8; it's just hidden

Presto! Now, when you go to power down your system, you'll see the Hibernate option in your list of choices. In the same System Settings window mentioned in step 4, you can choose *Hibernate* for any of the 'Power and sleep buttons and lid settings' options. ●

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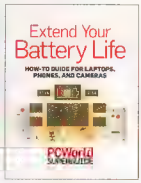

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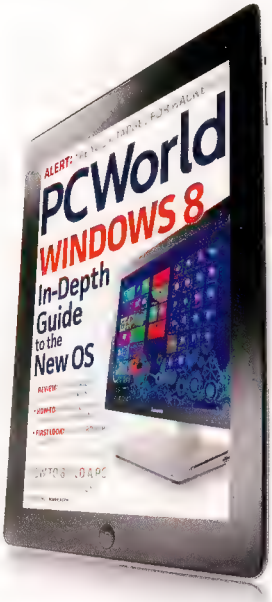

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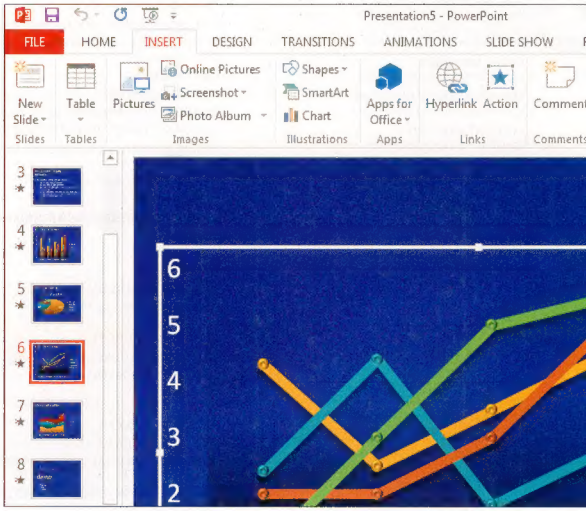
Five Things

YOU MUST KNOW ABOUT...

Office 2013

Microsoft's "new Office" blends cloud services with Office 2013, the core desktop application. A sleek, revamped appearance and features designed for cloud integration are just the beginning of all the changes.



1 Syncing Across Devices

When you save Office documents online, they'll be available to you from any device via Office 2013 on a PC or a tablet, or through the Web Apps. Microsoft has upgraded the apps for Word, Excel, OneNote, and PowerPoint with the Modern look and Office application color coding. In addition, Word, Excel, and PowerPoint will retain the last location where you were working before you saved —down to the letter, cell, or image.

2 SkyDrive Integration

Your work now integrates with the cloud, by way of SkyDrive and SharePoint. If you use SkyDrive, the account details will appear in the corner of all the application screens, as well as on the start screens. You can click your account details to switch and manage accounts. When you save a document, worksheet, or presentation, the application by default will save the item to your SkyDrive account, but you can save locally as well.

3 Touchscreen Use

Some new Office 2013 features are designed to make working with a touchscreen easier. The new Read Mode in Word opens a document in reading view and lets you scroll through it with a finger swipe. Also, if you click the Touch Mode button on the Quick Access Toolbar, the toolbar spreads its icons farther apart to provide easier access for fingers. Otherwise, however, touch integration in Office 2013 is somewhat erratic.

4 PDF Editing

Until now, you could not edit PDF files in Word without first converting them to the .doc or .docx format. With the new Word 2013, however, you can now open PDF files, edit them there, and then save them as either .docx files or PDFs. Even when opened in Word, the file retains the structure of the PDF file, including that of elements such as tables. So now you can just open a PDF file and get straight to work.

5 More Graphics Options

In Word, PowerPoint, Excel, Publisher, and even Outlook, new icons on the Insert tab of the ribbon toolbar will now let you insert pictures from your local PC or from different online sources. The options include inserting images within the Office Clipart collection online, via a Bing search, or from your own SkyDrive or Flickr account. (To access your Flickr account, however, you must first authorize Office to connect to it.) ●

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